The OIL WEEKLY

DEC 26 1944

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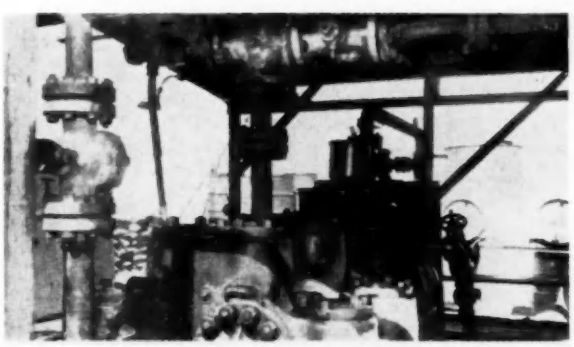

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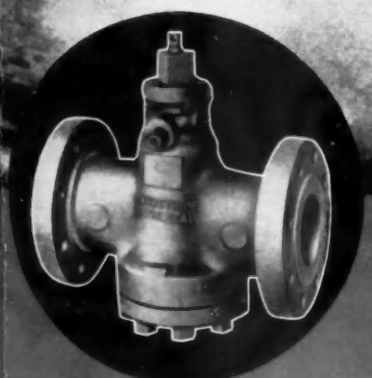

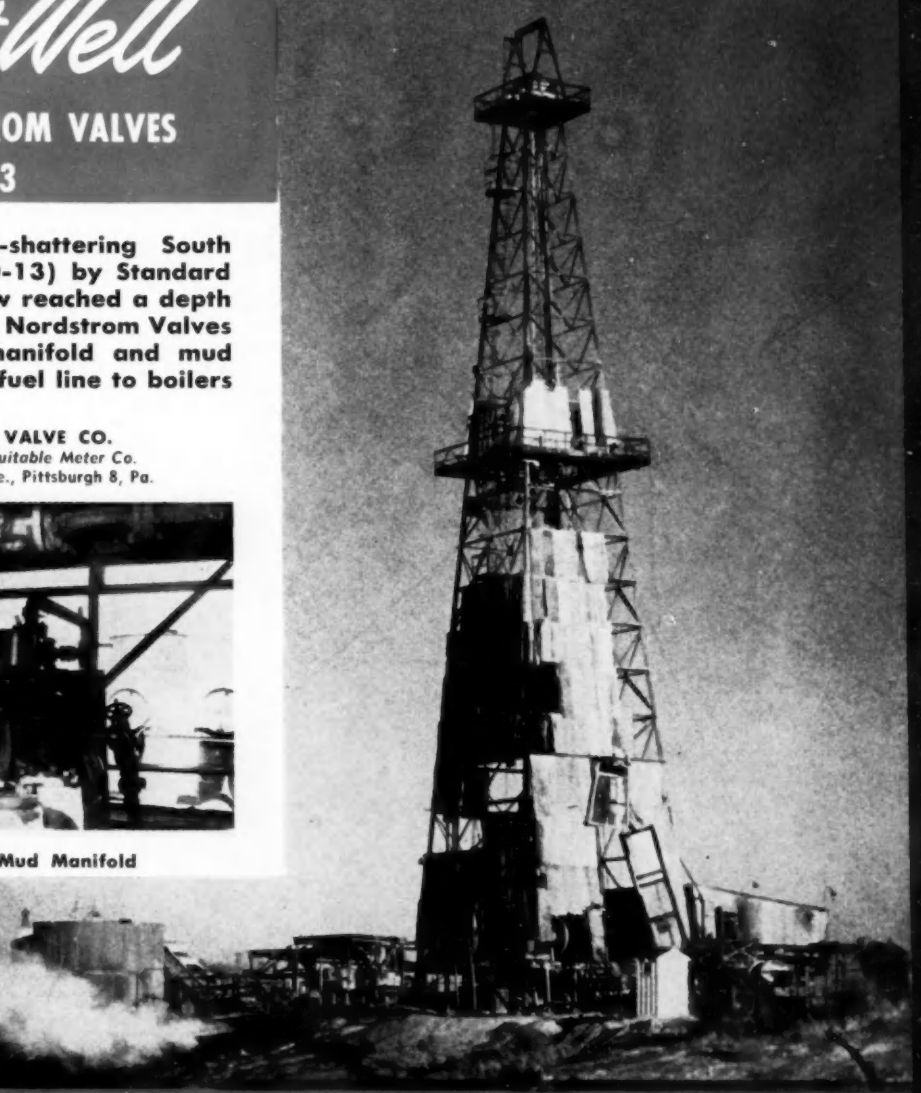

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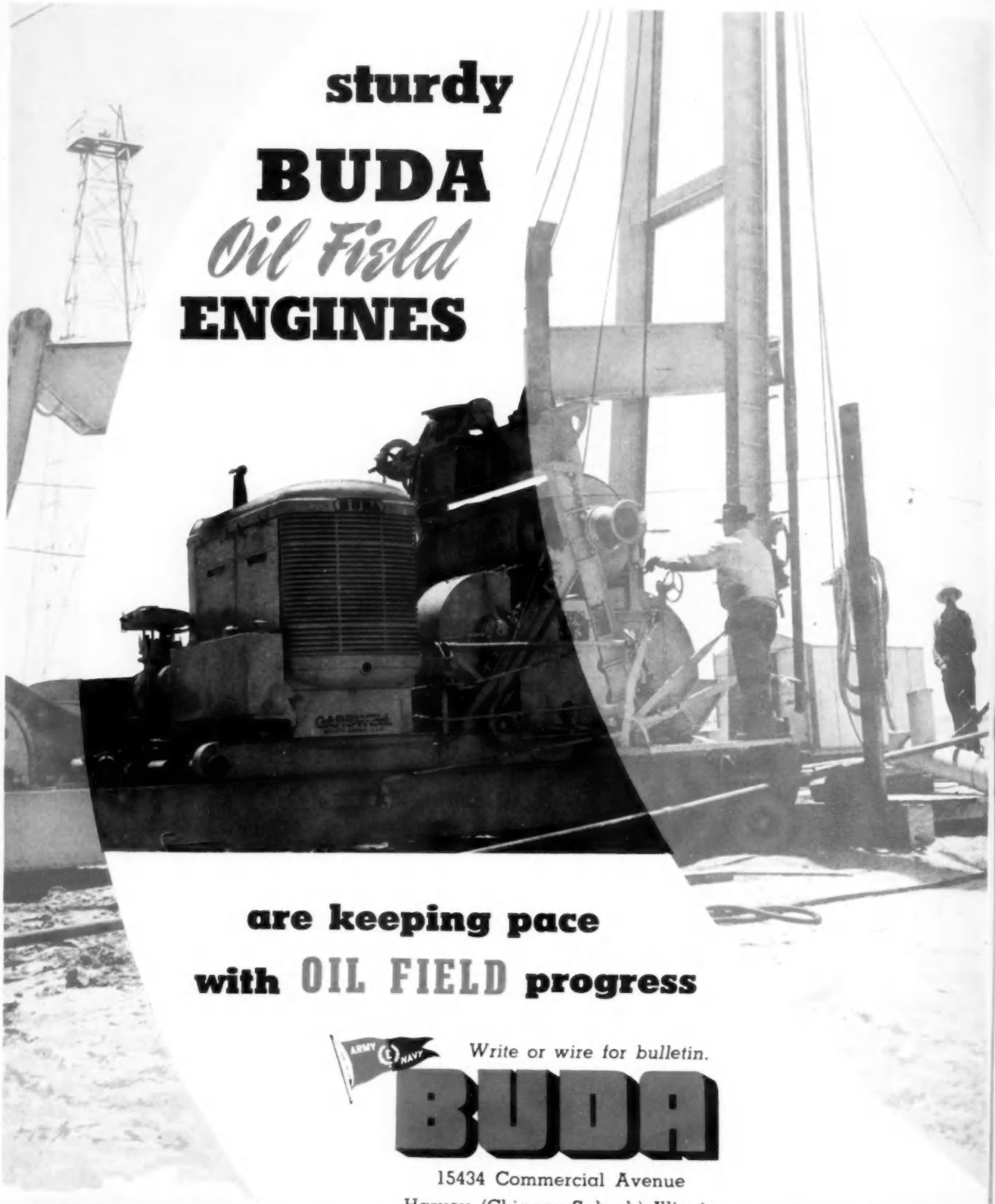

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LOOKING AHEAD
... with the Editor

PETROLEUM property operators are often confronted with complicated pumping problems, multiplied frequently because of the characteristics and depths of various producing zones. Handling these problems with the greatest degree of success then becomes the petroleum engineer's chief concern.

In the Seminole area of Oklahoma, for instance, the wells produce from such formations as the Cromwell Sand, Hunton Lime, Simpson Dolomite, and First or Second Wilcox sand. The horizons vary in depth from 3400 to 4500 feet.

The wells divide themselves into three groups, small, medium, and large-sized volume producers. Small volume producers are found chiefly in the Cromwell or other Pennsylvanian sands, while the medium and large-volume output is from the Hunton lime, Simpson Dolomite, or the Wilcox.

The most serious pumping troubles have been met in the large-volume wells. However, many special situations have arisen in connection with small wells. A discussion of pumping practices that have proved most successful in the district, will be presented in an early issue. The author is C. D. Borland, with the Gulf Oil Corporation, Tulsa, Oklahoma.

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The Changing Panorama

East Texas Pressure—Is It Up or Down?

Is THE bottom-hole pressure of the East Texas field rising or declining? One of the two regular studies of the pressure shows a sharp downward trend has existed for several months, while the other declares the pressure is rising slightly.

Certainly, the field's pressure cannot be rising and declining at the same time. It must be doing one or the other. Although the two pressure studies use slightly different methods, one a weighted average and the other a mathematical average, both should reflect a similar trend if a true picture of reservoir conditions is being obtained.

As repeatedly stressed by THE OIL WEEKLY during the past six weeks, special circumstances make this too important a question to be left unanswered. Texas simply is not producing enough oil to satisfy the demand imposed upon it by rising military consumption. Even with heavy drafts on stocks within the state, it has been impossible to maintain tank car and barge shipments to the East Coast.

When considering means of obtaining the additional supply required, the finger points to the East Texas field as the most logical source. This is especially true if the bottom hole pressure actually should not be deteriorating as rapidly as shown by the Railroad Commission's monthly report. The acute transportation problem dictates that additional needed oil be made available at the mouth of the Big-Inch pipe line, so there will be a way to move it to points where it can be used. East Texas is the only field so located that existing facilities permit delivery of the additional oil required for the Big-Inch. Furthermore, according to the Ivy report, only overall yardstick available on individual field producing abilities, many fields in District 3 are exceeding their maximum efficient producing rates, while the East Texas field could produce one more day per month without exceeding its maximum efficient rate.

Another month has passed without any apparent effort made to settle the question of whether the bottom-hole pressure of the East Texas field is rising or declining. What became of the plan, proposed way back in August at the Texas statewide hearing in Austin, to have a committee of engineers study the problem? So far as is known, nothing has been done since the end of August, when the commission's Director of Production Jack Baumel submitted to the Commissioners a plan that had been agreed upon by the committee of engineers. With the question of the East Texas pressure trend so important, why has there been so great a delay in attempting to find out which of these studies represent the true condition of the field?

Congratulations on Humble's Celebration

DOUBLE congratulations are due to Humble Oil & Refining Company and its employes.

First, of course, these are due because of the company's very fine war achievements, which were commemorated on December 14, in ceremonies marking the manufacturing of its billionth gallon of aviation gasoline since Pearl Harbor. The Humble organization stands first in the nation in four important fields: in the production of crude oil, in the transportation of petroleum by pipe lines, in the manufacture of toluene, and in the production of aviation gasoline. Each of these is a great achievement, of which the industry as well as the company and its employes can be proud.

The second round of applause is due the Humble Company for the way it took advantage of the occasion to tell the story of oil to the public. On display in several large tents was the finest exhibit of oil industry operations ever assembled. Particularly outstanding were the excellent glass scale models depicting in simple form how aviation gasoline, motor fuel gasoline, synthetic rubber and toluene are manufactured from petroleum. No one could spend time in this part of the exhibits without "getting the drift" of the importance of oil and how these products are manufactured.

These constituted one of the most important industrial public relations attempts the industry has ever made. If every American could see these exhibits, the industry immediately should be able to note an improved tone in public thinking toward petroleum. These exhibits should be maintained, and shown on every possible occasion.

Conservation Views Of Industry Needed

TEXAS operators will have an opportunity, following a statewide Railroad Commission hearing at Austin on December 19, to discuss informally the state's gas problems, something which steadily is receiving more and more comment. The commission is giving the industry a chance to offer suggestions and enter into a discussion as to what is needed to improve present laws applying to oil, distillate and gas conservation.

It is highly probable that the representatives of the larger companies, who have a great deal at stake, will hesitate to accept the invitation of the Railroad Commission to the extent that that they should. This timidity is no new thing but in the interest of future operations it should be overcome now.

The Texas law with reference to distillate production and gas production can be materially improved to the interest of the people of Texas and the oil and gas industry within the state. If it is not, we can expect some federal interference which nobody wants.

THE OIL WEEKLY respectfully offers to the commission the suggestion that it give serious consideration at the conference to the Arkansas conservation law as relates to petroleum. This law seems to be working well in a practical manner. It is susceptible to improvement, and the improvement can be taken from a bill offered the Mississippi legislature two years ago. (THE OIL WEEKLY, November 13.)

The October 16 issue of THE OIL WEEKLY discussed the Arkansas law at length. In our discussion we had the benefit of comments on it by most of the companies operating under it—and the consensus, as expressed in letters to THE OIL WEEKLY was that the law is a sound one and if adopted in Texas and faithfully carried out by the regulatory body of this state, much good to all concerned would result.

The industry should prepare to attend the Austin conference with definite recommendations and suggestions. Unless it enters into the meeting wholeheartedly and constructively, it would find itself in a poor position to criticize the program that members of the commission may draft.

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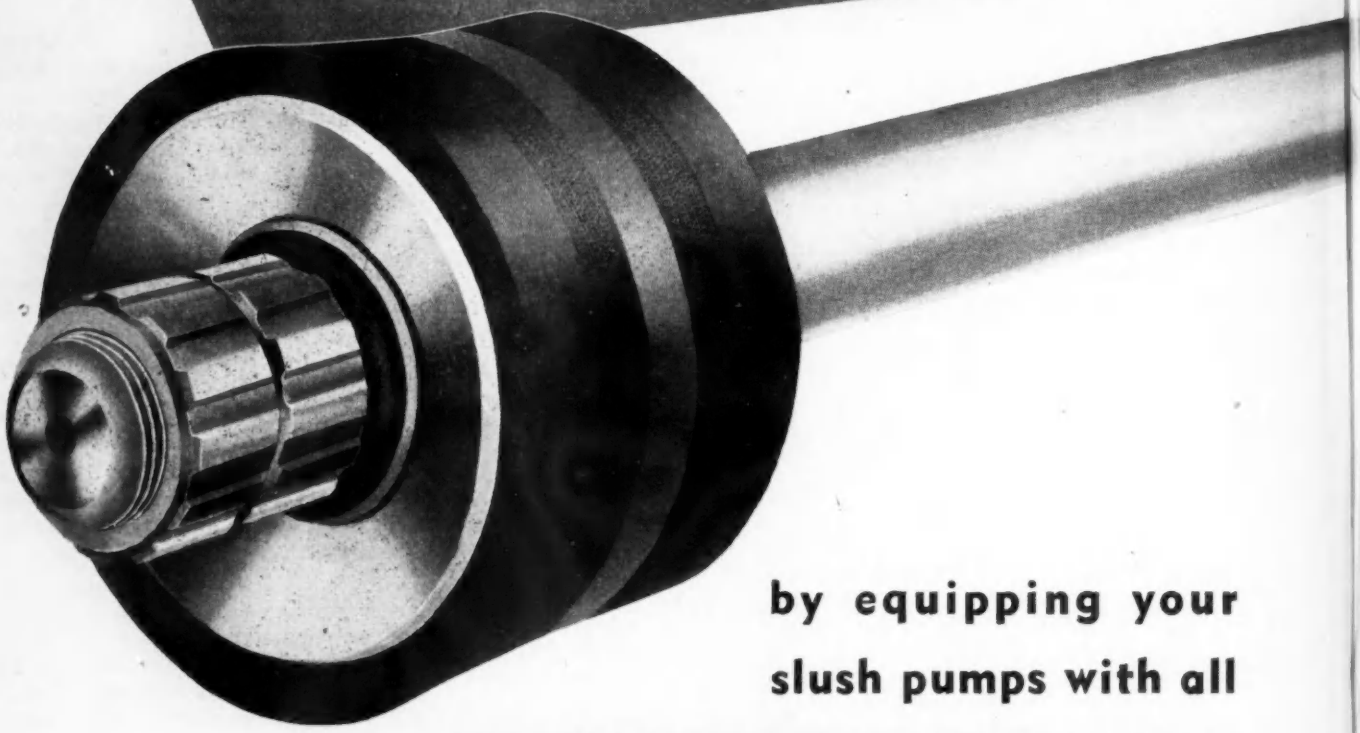

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Keeping War Production Schedules

TO TELL the American people how the shell shortage threatens to slow the big offensive against the Siegfried wall, General Eisenhower has sent four front line artillery veterans home from Germany. Recently they visited United States Steel Corporation's Oil Well Supply Company plant at Oil City, Pennsylvania, the first in the nation to make eight-inch shells for the Army's big howitzers. These battle-wise gunners learned that present production at the Oil City plant is now four times the rated capacity of the plant's facilities.

Said Sergeant Richard O. Vander Bloemen, in lauding this achievement: "To ask you for more seems like asking for the impossible. But your sons in Germany are doing just that—the impossible, and we are General Eisenhower's personal emissaries sent here to plead with you to do the same."

In response, Fred F. Murray, president of the company, assured the men from the front that "'Oilwell' with its oil tool production greatly curtailed, is making an all-out effort to increase its shell production as a contribution to the final and major assault on fortress Germany. We feel very keenly the plea of General Eisenhower. To maintain this flow of ammunition, it is absolutely vital that all scheduled production be met and that all accelerating rates of production be increased to the maximum of time."

Industry Must Brace For New Draft Shock

THE announcement by Selective Service that it again will commence drafting men up to 37 years of age is a warning that the next six months are likely to see the manpower shortage reach its most acute stage. Industry must prepare, as best it can, for this shock.

While the petroleum industry is recognized as an essential occupation, it must remember that not all of its branches qualify men for deferments. Industrial deferments probably will become more difficult to obtain.

R. V. Shirk, PAW manpower counselor for District 3, has declared that industry may lose many of its semi-technicians and non-technicians who have gained their position through experience, unless some protection is granted. This would include drillers, now badly needed to fulfill PAW's expanded goal for 1945.

This is not to say that the industry will not lose some of its full-fledged technicians also. Younger men, especially those under 30, are the most desirable from the military viewpoint. Under the new selective drafting program, deferments for this group probably will be scrutinized with greater care than heretofore.

Many men under 26 now deferred because of essential civilian jobs may be drafted. This action may be commenced within the next month or two. By spring, when many deferments expire, all those under 26 not doing what is considered the most essential work may be called up for military service. Some estimates are that industry will lose fully a third of the men under 26 years now deferred.

It may even be necessary to expand the age limits in which only the most essential type of work qualifies a man for deferment. Requisites similar to those now used for men under 26 may be applied to all men under 28; or perhaps it may be decided to use a little broader deferment criteria and include all those under 30.

Thhe situation promises many headaches to industry, and business should be formulating plans which will enable it to get along in the best possible way. It would be wise to determine what men may be called up for military service, and then attempt to start training replacements now. About the only hope for procuring men now not employed by a company appears to rest with the employment of returning veterans. In this connection, a bulletin prepared by the Petroleum Industry War Council (1625 K Street, N. W., Washington, D. C.) may prove helpful. It makes some practical suggestions on how to develop a company program for re-employment of veterans.

No person can know the absolute necessity of oil until he has been "up front" and seen the important and necessary armor and mechanized vehicles move against the enemy. We over here on the front know that oil has been more or less a deciding factor in the defeat of Germany and until the complete destruction of her forces, we must continue to use and demand many barrels from those back home.

—A TECHNICAL SERGEANT
on the Western Front.

"What Most Fighting Men Believe In"

THAT our fighting men sometimes think beyond the drudgery of the job at hand, to the issues at stake, is shown by a letter addressed to the publisher of this magazine, last week. It came from a captain on duty with the U.S. A.A.F., and is quoted in part, herewith:

"The other day I noticed one of the men looking at a clipping he had received from his home town newspaper because it contained pictures of his friends that are now here fighting in France. He showed me the clipping and after I had looked at it, I turned it in my hand and found on the back, part of an editorial entitled, 'SO HELP ME GOD,' (THE OIL WEEKLY, October 9), and I noticed that you were the author. I am only one of many who are serving overseas and who often think and worry about the things you stated in this editorial. It gave me a thrill of pride to think that a Texan had the moral courage to write such an editorial and to give vent to his beliefs.

"I can well remember another day when that blazing Texas sun shown down on myself and my classmates as we also took that selfsame oath you quoted, and which we have since, and are still trying to defend. Many who stood there with me have given their lives for these principles, and many more of us every day risk ours to keep them alive. They who have gone and we who still stay to fight have often sat and discussed the ideas that you so courageously placed on paper and have wondered if there were enough red-blooded Americans left to stand by American ideals as set down in the constitution.

"Your editorial has caused much discussion among men in my combat group; and many of these so-called leftist editorial writers would be very much surprised to know that among us soldiers who do the fighting the greater percentage adhere to and believe in the facts you stated. I am requesting, if possible that you send me a few copies of the editorial for me and my buddies. We would like to have it over here as a reminder that some Americans are trying to preserve what most fighting men believe in and hope to find when they return to the America they love enough to die for if necessary."

As an individual and as a consumer, in my opinion, we are not likely ever in peacetime to feel the pinch of lack of oil for essential purposes.

—E. DEGOLYER,
"Oil for Peace or War,"
in "The Southwest Review."

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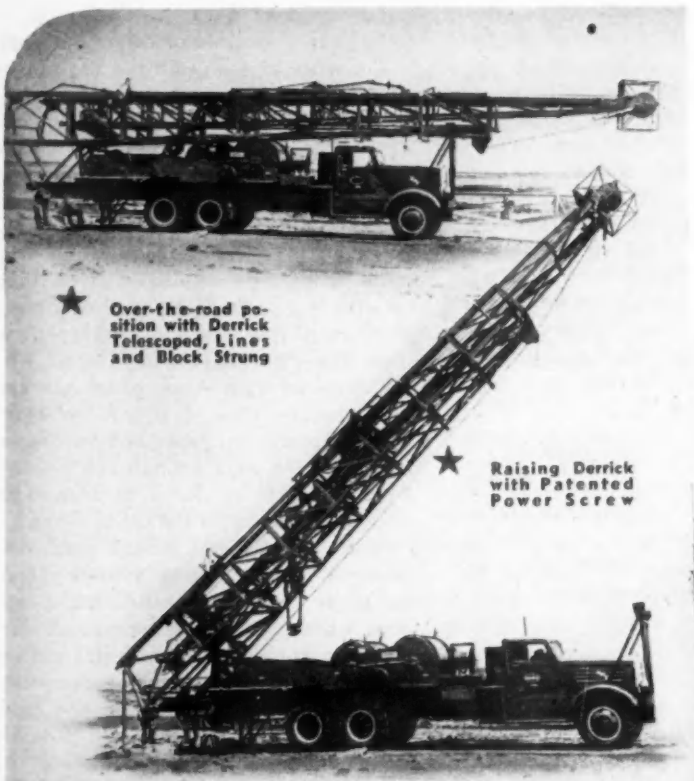

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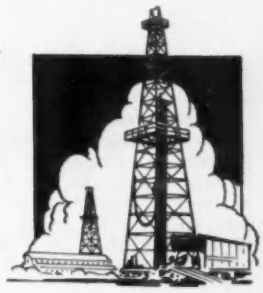

By BERTRAM F. LINZ, Washington Correspondent

THE Anglo-American oil agreement continued last week to be the major subject of oil discussion in Washington as the State Department was revealed to be in the midst of an earnest study of the PIWC recommendations preparatory to deciding the procedure to be followed in approaching the British government with a request for renewal of negotiations.

Other developments in the treaty situation included:

Hardwicke's Treaty Views—A legal opinion by Robert E. Hardwicke, PAW chief counsel, that the original treaty did not take from the states and give to the federal government any powers which would enable the latter to attempt the control or regulation of the domestic industry.

Recommendations no Infringement—The disclosure that prior to the meeting of the PIWC national oil policy committee, the Department of Justice, in response to an inquiry by Hardwicke, held that the anti-trust laws would not be infringed by an agreement between members of the committee as to the recommendations to be made for revision of the treaty.

Pact Withdrawal Likely—The eventual disposition of the treaty was still in the air, but it was expected that it would be withdrawn from the Senate and further meetings with British representatives arranged at which it could be revised. The best guess in Washington at the moment is that the substance but not the wording of the industry's proposals will be incorporated in a draft which will be the subject of the reopened negotiations.

Heavy Overland Movement—Other developments in the national oil picture included a report by PAW showing that the overland movement of oil now exceeds 3,000,000 barrels daily, mostly military, of course. However, a survey of the situation indicates that the civilian economy will operate this winter right on the borderline of shortage and, in fact, there may be shortages in Districts 1, 2 and 5, with District 4 in fair balance and a possibility of surplus in District 3. Even this has been achieved only by drastic scaling down of projected increases in military demand, and any raising of military requirements may be sufficient to throw the whole civilian economy out of gear.

1945 Oil Demand—For next year, it was announced, the industry will have to provide an average of 4,700,000 barrels of crude daily, regardless of the end of the European war, which would provide approximately 800,000 barrels a week more than the expected production for the year now ending.

Front Line Shortage Explained—During the week, PAW came to the defense of the industry against any idea on the part of the public that our armies in Europe have been slowed down for lack of gasoline. Shortages of which General Patton complained, it was declared, were due to the inability of military transport to keep up with the advance of the troops and not to any deficiency on the part of the industry, which has met every military demand for every product in every theater of war.

Average of 4,700,000 Barrels Daily During 1945 Is Called for by Ickes

Daily production of 4,700,000 barrels, which is about the rate which has prevailed for the past several months, is called for right through 1945 "regardless of when Germany surrenders," Administrator Harold Ickes said December 14. This is approximately 40,000,000 barrels or an average of more than 100,000 barrels daily than is expected to be produced this year.

The administrator's call for the record production which he said "is necessary to meet modern, mechanized war's enormous demands for petroleum products," came as Deputy Administrator Davies, in a year-end review of 1944 operations, explained that:

"It has been possible to meet the tremendous increases in petroleum requirements for war because the American petroleum industry built up a substantial volume of oil productive capacity above requirements during the 15 years preceding the outbreak of hostilities. But this cushion has now been almost completely absorbed and, with few minor exceptions, the nation's oil fields are now being produced up to the limit of maximum efficient productive capacity."

Year's Figures Cited

Davies' review showed that in the first nine months of this year 1,316,464,000 barrels of petroleum liquids, or an average of 4,805,000 barrels daily, were produced, of which 1,243,129,000 barrels was crude and 73,335,000 barrels natural gasoline and allied products, with the expectation that for all of 1944 the output will reach nearly 1,700,000,000 barrels of crude and 101,000,000 barrels of natural gasoline. Lowest production (all liquids) was 4,632,000 barrels daily in January and the peak was 5,048,000 barrels in September.

In 1943, he pointed out, domestic operators produced 1,503,176,000 barrels of crude and 88,179,000 barrels of natural gasoline, an average of 4,360,000 barrels daily, and for the prewar years 1937-1940, the daily average of all petroleum liquids was 3,641,000 barrels of which 3,499,000 barrels was crude and 142,000 barrels natural gasoline.

Davies placed the 1944 production of natural gasoline and cycling plant products at 101,000,000 barrels, an average of 274,000 barrels daily, which was an increase of 57 percent over the daily average output of 175,000 barrels in 1941.

Close to PAW Goal

Currently, he said, there are more than 400,000 producing oil wells and almost 60,000 producing gas wells in the United States, and despite the dislocation in manpower and continuing shortages of important items of material and equipment, the industry will come close to fulfilling PAW's 1944 program for 24,000 new wells.

Davies summarized the year's exploratory activities as follows:

"Principal discoveries during the first six months of 1944 were made in Texas, southern Louisiana and southern Mississippi. Alabama became an oil producing state for the first time. Discoveries this year may exceed the approximately three quarters of a billion barrels of crude oil found in 1943, but the new discoveries likely will not offset the 1944 production.

"One of the most significant developments in oil exploration during 1944 was the extension of Ellenburger production in West Texas and into New Mexico. The productive potentialities of this

area cannot be fully estimated without further exploratory and development work.

"Discoveries of oil and extensions of fields in Mississippi opened up an important oil producing area east of the Mississippi River. Intensive exploration activity is being continued in this area but, as yet, the extent of the reserves of the region cannot be estimated reliably."

Study of Costs by OPA Is Favored by Independents

Independent operators last week seized upon the latest report of the House small business committee, calling upon the OPA to undertake an immediate study of the costs of finding, developing and producing crude oil, to press again for a general increase in the price of oil.

In a letter to Price Administrator Bowles following a personal meeting with Sumner Pike and O. D. Judd, OPA oil price chiefs, J. P. Coleman, Wichita Falls, Texas; Merle Becker, St. Louis, and Charles F. Roeser, Fort Worth, Texas, urged that the agency abandon its opposition to an over-all price adjustment and fall in immediately with the committee's recommendations.

They urged also that OPA comply with the suggestion that it set up a nation-wide industry advisory committee of crude producers, with independents represented in proportion to their percentage of national production and the number engaged in the business, as provided for in the price control act.

Independent representatives said that the visit of the three operators to OPA and their subsequent letter to Bowles is the beginning of a movement to produce the formal method, under OPA regulations, of getting the case for price readjustment before the agency, terminating a long debate in which the independent producers, aided at times by PAW, have carried on with the price control officials.

White to Leave PAW Effective January 1

Will W. White, since 1942 aviation officer of PAW, will leave Washington at the end of the year to return to the Standard Oil Company (New Jersey).

As aviation officer, White has acted as executive secretary of the inter-service inter-agency group which has administered the supply of aviation fuel for the United Nations under the general direction of the munitions assignment board, and as one of PAW's representatives on various technical bodies. He ranked as an assistant director of the refining division but because his duties were so broad did not have the title.

PAW Asks Texas for Less January Oil Than December

The Petroleum Administrator for War asked that Texas produce 2,274,000 barrels of all types oil during January, 1945, of which 2,124,000 barrels is crude. This is a decrease of 9000 barrels of crude from December. Crude production from fields in Districts 7-C and 8 amounts to 453,000 barrels daily, 9000 barrels less than for December. Sweet crude production would be the same as for December.

State Department Seeks Basis for Reopening Oil Talks With Britain

State Department officials are making a close study of the industry's proposals on the Anglo-American oil treaty with a view to developing a basis for a reopening of the negotiations with the London government.

Officials said that no decision has been reached as to the procedure to be followed, but admitted that the logical course would be to withdraw the treaty now in the hands of the Senate Foreign Relations Committee, negotiate a new agreement with the British and send a revised treaty to the Capitol for ratification.

So far, the industry's proposals have not got beyond the hands of Charles B. Rayner, petroleum adviser to the department, who is planning to hold informal conversations with representatives of the PIWC national oil policy committee in order to clarify some of the provisions.

While, so far, it appears that there is no difference between the department and industry drafts of the treaty so far as principles are concerned, the committee recommendations, among other things, amended the definitions of "United States" and "United Kingdom," restricting the former to "the continental United States including Alaska" as compared with an all-inclusive definition in the original draft, and the latter to "England, Scotland, Wales and Northern Ireland" as compared with those areas and all colonies, overseas territories, protectorates, protected states and mandated territories.

Alaska and Trinidad

It was pointed out that, at first glance, these definitions appeared to consider oil from Alaska—the only United States territory in which oil has been found—as domestic oil, but oil from Trinidad—the only producing British colony—as international.

There also were other provisions of the treaty on which some discussion will be necessary to develop more definitely what the committee intended, but it is believed all of these questions can be resolved by informal meetings and, at present at least, there is no thought in the State Department of calling a general meeting for their consideration.

While there has been no understanding reached with the British for a reopening of the negotiations, it is believed in Washington that no difficulty will be encountered in arranging new meetings in view of the long-held belief in London that the original treaty never could obtain approval (THE OIL WEEKLY, November 13). Reports to this effect indicated that the British government was resigned to the expectation that discussions looking to revision would be necessary.

Says No Change of Power

Paw last week made public an opinion of its chief counsel, Robert E. Hardwicke, on the question whether the original agreement, if approved by the Senate, would vest in the federal government power now reserved to the states, paving the way for the government to regulate or control the domestic industry, in which he interpreted the agreement as meaning that the "distribution of powers between the nation and the states is not to be changed, and that powers reserved to the states are not taken away from the states and vested in the federal government so that the right of the federal government to regulate the oil industry is increased."

Hardwicke's opinion supported the contentions of State Department officials that the agreement was never intended to affect domestic oil, and, he declared, "when the agreement is considered as a whole, it is evident that the two governments were primarily interested in solving problems relating to international trade in petroleum and its derivatives, as distinguished from problems relating to domestic production and trade."

Giving his interpretation of the agreement, article by article, Hardwicke concluded that:

"The provisions of the agreement are not self-executing.

Interstate to Take Over Lines of Merged Companies

Standard Oil Company (New Jersey) December 14 announced that two of the nation's large crude oil pipe line systems, now operated by the Standard Oil Company of Louisiana and Oklahoma Pipe Line Company, will be consolidated December 31.

The combined system will be known as the Interstate Oil Pipe Line Company, with a northern division operating from Tulsa, and a southern division operating out of Shreveport, Louisiana. Head offices will be in Tulsa. The change is expected to provide a more efficient crude oil service to the company's Baton Rouge refinery.

Trunk lines and gathering systems in Mississippi, operated by the Oklahoma company, will be combined with those now operated by the Louisiana company in Louisiana and Arkansas and managed from Shreveport. The Louisiana company's present pipe line organization will be largely kept intact at Shreveport but the consolidation, with its increased responsibilities for Mississippi lines, is expected to result in an expansion of activities in that territory.

The northern division will operate the Oklahoma Pipe Line system in Montana, Wyoming, Illinois, Kentucky and Oklahoma and the Oklahoma Pipe Line Company organization at Tulsa will be practically unaffected by the consolidation.

W. R. Finney will be president of Interstate; L. F. Kahle, executive vice president; Bruce Ramsey, vice president and manager in charge of the northern division and Smith W. Day, vice president and manager in charge of the southern division. Paul Griffin, president of the Oklahoma company, will retire from active duty on December 31.

More than 3500 miles of trunk and gathering lines will be brought together under the consolidation, including 583 miles of gathering and 1588 miles of trunk lines now operated by the Louisiana company and 444 miles of gathering and 1039 miles of trunk lines owned by the Oklahoma company.

"The International Petroleum Commission is authorized to gather data, study the problems, and make recommendations for carrying out the aims and the general principles which are recognized by the two governments, but

"The recommendations of the commission are not binding on the two governments or their nationals.

"While the two governments do not obligate themselves to adopt and enforce the recommendations of the commission, each does assure the other that it will undertake to make effective such recommendations as may be approved by it; however,

"Applicable laws and concession contracts are to be recognized, and the distribution of power between the nation and the states is not to be disturbed. Consequently, if a recommendation could not be made effective by the federal government because the power to act with respect to such a recommendation was within the competence of a state or states, then the agreement does not undertake to change such power. In other words, no power is taken from the states and vested in the federal government so that the federal government will have power to make effective recommendations which otherwise would require action by a state or states.

"It has been argued that if the agreement means what it is here interpreted to mean then the two governments will accomplish little or nothing by the agreement," Hardwicke said. "A short answer to that argument is given by pointing out that in 1935 a number of the oil-producing states, with the approval of Congress, entered into an agreement known as the Interstate Oil Compact, which is quite similar in principle to the agreement under discussion. It is still in force. The Interstate Oil Compact announces and recognizes general principles and aims. It provides for the creation of an Interstate Oil Compact Commission which may make recommendations to the states and to operators for carrying out the principles stated in the compact, but there is no power given to the commission to enforce its recommendation, and such power must be exercised, if at all, by each state in accordance with its laws. It has repeatedly been asserted that the lack of power in the commission to enforce its suggestions or recommendations accounts for the good which the commission has done."

All Military Demands Met

PAW last week denied that the oil industry had any responsibility for shortages of gasoline which had been reported as having temporarily halted the advance of Lieutenant General George S. Patton's Third Army.

In a formal statement, both Ickes and Davies placed the blame for any shortage which may have been experienced upon the deficiencies of military transport operations and entered a spirited defense of the industry's activities.

"There never has been a shortage of gasoline for any combat area," Ickes asserted. "Dispatches clearly indicate that General Patton moved so fast that the Army's transport system could not bring up enough fuel to keep him moving. The fact that a considerable quantity of gasoline was flown from the beachs to the front shows that the problem was one of military transport rather than any lack of stocks."

Recommendations to Committee Held No Infringement of Anti-Trust Laws

Department of Justice officials were disclosed last week to be disturbed over charges that a department ruling had foreclosed representatives of the industry from serving on the technical committee proposed to work with the State Department in negotiating the the Anglo-American oil agreement.

This was made clear in publication by PAW of correspondence between Robert E. Hardwicke, its chief counsel, and Assistant Attorney General Wendell Berge, head of the Department of Justice anti-trust division, running from October 30 to December 2 when, in response to a flat question whether the suggestions for revision of the treaty then being considered by the PIWC national oil policy committee would be in violation of the anti-trust statutes, Berge wrote that the making of recommendations in itself would not be considered illegal, and made the suggestion, later incorporated in the committee's report, that the recommendations should not bar the expression of opinion by members of the committee or the industry individually.

"While, of course, it is clear that the meetings and the reaching of an agreement upon the recommendations to be made would not, without more, constitute a violation of the anti-trust laws," Berge said, "I think it is important to point out that this opinion on the legality of the activities would not serve to immunize any prior arrangements nor serve to legalize any other or additional arrangement between members of the industry in violation of the anti-trust laws.

"In these situations where groups may be requested to present views to a government agency, we of course hope that such requests will not foreclose or impede expression of views by individual members of the group or by others to the government agency. We assume that the recommendations to be made by the group to PAW will not be binding as a future commitment on members of the PIWC or any member of the industry, nor will it operate to prevent any member of the PIWC or any member of the industry from making such individual recommendations as he may desire."

The correspondence was initiated by Berge after he read the minutes of the PIWC meeting September 14, last, when he said, he was "somewhat disturbed" by a statement by Deputy Administrator Davies which he interpreted as PAW's belief that industry representatives could not serve as members of the technical committee working on the treaty and would have to operate solely as advisers, because of the department ruling.

Berge pointed out that "the Department of Justice has never taken the position that consultation by any industry committee with the government violates the anti-trust laws," as stated by Attorney General Biddle last April 26 in laying down the extent to which activities of industry members working with government agencies would be immune.

Hardwicke's Reply

Replying for Davies, Hardwicke explained that the former's statement dealt with that part of Biddle's statement holding that no industry representative should have authority to determine national policy or to carry out a program, which was seen as limiting the scope of any industry men working with the State Department technical committee.

However, Hardwicke declared, "in spite of the statement of April 26 by the attorney general, I know that there is still widespread belief by members of the oil industry that a ruling by the Department of Justice, based on anti-trust laws, did prevent a more active participation by members of industry in the negotiations preceding the signing of the Anglo-American petroleum agreement.

"Indeed," he added, "I think the belief is rather prevalent that committees appointed by an agency of government to consult with government face the hazard of prosecution for violation of anti-trust laws merely for making recommendations, especially if the recommendations are adopted and made effective by government unless, in conformity with Section 12 of the small business mobilization act, the activities of the committee are certified by the cahirman of the War Production Board as being requisite to the prosecution of the war. We do not agree with that view."

Mid-Continent Association Favors Oil Pact Revision

J. C. Hunter of Abilene, Texas, was re-elected president of the Mid-Continent Oil & Gas Association in Tulsa, December 11, when the group went on record approving the Petroleum Industry War Council's resolution that the Anglo-American oil agreement be revised to avoid direct or inferential effect on oil production or development in individual states.

Other officers chosen were F. M. Porter, Oklahoma City, first vice president; Clarel D. Mapes, Tulsa, general secretary of the association, and E. F. Bullard, president Stanolind Oil & Gas Company, Tulsa, vice president for Oklahoma; E. B. Shawver, independent, Wichita, vice president for Kansas; George Gibbons, executive vice president Texas division, Dallas; D. W. Harris, president Arkansas-Louisiana Gas Company, Shreveport, La., vice president for Arkansas-Louisiana; Van S. Welch, independent, Artesia, vice president for New Mexico; C. L. Morgan, independent geologist, Jackson, Mississippi, vice president for Mississippi-Alabama.

Valentine Scrip no Good For California Beach Area

Approving a decision of the general land office, Secretary of the Interior Harold Ickes announced December 14 that old government "Valentine" land scrip cannot be used to acquire lands potentially valuable for oil and gas along the beaches at Los Angeles and other points in southern California.

Rate of Completing Wells Lower During November but Many Rigs in Operation

November brought some let-down in the rate of completing wells in the United States and also a leveling out of the formerly rising trend in number of drilling rigs in operation, which foreshadowed an even course of completions in December. Nevertheless, with active rigs now more numerous than in 1941, this year will show more than a 25 percent increase in completions over last year. For the first 11 months of 1944 weekly average completions were 26.6 percent above the corresponding months of 1943.

In the 5 weeks ended December 2, 1944, United States completions averaged 484 per week, compared with 528 weekly in October, 539 weekly in September, and 440 weekly in November of 1943.

At the end of November 4183 wells were drilling or rigging up, compared with 4167 at the end of October and 3261 at the end of November last year. There are now several hundred more rigs in operation than there were in late 1941, which was the most active time since the 1920's, although the present rate of completing wells is materially short of the rate in 1941. This disproportionate situation is attributed to lower efficiency in drilling operations under existing wartime handicaps, which include difficulties in repairing rigs, inadequacy of trucks and tires for moving between locations, and deficiency and inexperience in manpower.

Through the first 11 months of 1944, completions averaged 458 per week, an increase of 26.6 percent over the 362 weekly of the like months last year. In the 49 weeks ended December 2, 1944, United States completions totaled 22,466, compared with 17,388 in the 48 weeks ended November 27, 1943.

Continuation of the completion rate during December at the same rate as in November would bring the total completions for 53 weeks ending December 30, 1944, up to 24,400. That would compare with the 19,212 actual completions recorded by THE OIL WEEKLY for 52 weeks in 1943 (Yearbook-Forecast number, January 31, 1944, page 120).

It is evident, therefore, that the actual record for 1944, by including 53 weeks instead of the normal 52, will be very close to the goal of 24,000 new wells which was set up for the year by the Petroleum Administration for War, as the indicated 24,400 completions in the 53 weeks ending December 30 this year will include about 400 old wells drilled deeper and re-completed. The actual record for 1944 when corrected to an actual calendar year basis of 52 weeks or 364 days will be even closer to the forcast of drilling made by THE OIL WEEKLY and published in the Yearbook-Forecast number, January 31, 1944, page 86. That forecast was that 23,535 new wells (not including wells deepened) would be completed in 1944. On a 52-week year basis, that forecast will be almost exactly fulfilled. For the indicated 24,400 completions to be recorded by THE OIL WEEKLY will include about 400 old wells deepened and also will include the approximately 484 completions of a 53rd week, leaving an indicated 23,516 new wells to be completed, on a 52 weeks basis, during 1944, against the forecast of 23,535. This will be a repetition of extreme accuracy of THE OIL

U. S. Completions in First 11 Months 26.6 Percent Above Last Year

(Figures compiled from weekly reports of editorial staff men, with following exceptions: Arkansas data from Arkansas Oil and Gas Commission; Illinois from Illinois Geological Survey except for November; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Allegany, New York, Bradford and Kane-Clarendon, Pennsylvania, from the Producer's Monthly; Tennessee from Tennessee Division of Geology.)

State or District	MONTHLY COMPLETIONS: NOVEMBER, 1944									CUMULATIVE COMPLETIONS: First 11 Months									RIGS IN OPERATION					
	Details for Nov., 1944					Total Completions				Details, Jan.-Nov., 1944					Total Completions				Details for Nov. 30, 1944			Total: Drilling and R. U.		
	New Wells				Old Wells Deepened					New Wells				Old Wells Deepened										
	*Oil	Gas	Dry	Others[6]		Nov., 1944[1]	Oct., 1944[3]	Nov., 1943[2]	Total Footage Nov., 1944	*Oil	Gas	Dry	Others		Jan.-Nov., 1944[4]	Jan.-Nov., 1943[5]	Percent Change in Weekly Average	Total Footage 11 Months 1944	Drilling	Rigs Up	Shut Down	Nov. 30, 1944	Oct. 31, 1944	Nov. 30, 1943
Alabama							2			10		21			31	2	+ 1404.8	153,127	3		1	3	3	1
Arizona					1							6			6	5	+ 17.3	16,190						1
Arkansas	10		6		1	17	21	14	83,821	125	5	78		2	210	233	— 11.7	1,188,523	31	1	3	32	30	44
California	152	2	18		3	175	172	159	533,825	1,536	31	256		65	1,888	1,346	+ 37.4	6,683,417	319	37	29	356	371	356
Colorado			1			1	4	2	2,035	17	1	7			25	24	+ 20.0	122,176	14		4	14	13	10
Florida							2	1				3			3	5	— 41.3	19,302	3		2	3	4	5
Georgia							1	2				8			8	4	+ 9.6	44,028		1	1	1		
Illinois	137		88	2	7	234	191	149	585,578	1,108	5	699	14	66	1,892	1,565	+ 18.4	4,753,026	205	31	14	236	253	211
Indiana	22	1	24		2	49	34	40	87,671	152	22	154		8	336	265	+ 24.2	619,598	30	9	5	39	51	41
Iowa												2			2	3	— 33.9	3,470	1			1	1	1
Kansas	75	18	76	2	6	177	129	163	563,141	818	61	682	25	15	1,601	1,598	— 18.6	5,365,221	262	19	11	281	273	266
Kentucky	23	6	28			57	91	47	129,361	352	100	269	3	13	737	388	+ 86.1	1,373,823	69	16	7	85	110	68
Louisiana	47	17	29			93	58	70	698,094	397	59	258	4	5	723	606	+ 16.9	5,358,013	158	11	7	169	178	103
North	12	12	13			37	26	37	159,904	100	48	116	1	2	267	286	— 8.5	1,149,755	42	2	6	44	59	33
South	35	5	16			56	32	33	538,190	297	11	142	3	3	456	320	+ 39.6	4,208,258	116	9	1	125	119	70
Michigan	26	4	31			61	79	51	154,631	244	55	331		5	635	545	+ 14.1	1,557,877	96	14	32	110	111	104
Mississippi	19		12			31	17	6	187,121	102	2	90	1		195	87	+ 119.6	1,142,661	48	8	6	56	45	14
Missouri	1		2			3	4	5	2,587	14	6	20			40	27	+ 44.9	35,675	5	4		9	2	5
Montana	20		7			27	27	30	76,318	192	21	87	9		309	208	+ 45.5	794,529	31	6	7	38	56	75
Nebraska							3	1		4		5		1	10	37	— 73.5	27,042	1			1	1	4
New Mexico	29	1	17		1	48	41	18	940,281	249	15	115		6	385	245	+ 53.9	1,966,698	110	4	28	114	101	78
New York	69			38		107	114	104	144,343	733	2	13	415		1,163	1,142	— 0.2	1,601,778	82	23	19	105	114	106
North Dakota																					1			
Ohio	24	48	40	1		113	88	26	303,372	184	398	338	14	1	935	707	+ 29.6	2,454,726	169	25	42	194	190	196
Oklahoma	136	9	58	5	7	215	145	147	850,253	990	131	548	50	27	1,746	1,342	+ 27.5	6,283,229	517	37	8	554	525	387
Pennsylvania	120	36	8	109		273	273	243	496,970	1,314	277	73	1,182	1	2,847	2,344	+ 19.0	5,077,802	280	245	35	525	313	255
South Dakota																					1			1
Tennessee										2	1	6			9	6	+ 47.2	7,848					1	2
Texas	381	38	200	4	11	634	512	412	2,534,945	3,303	210	2,009	23	131	5,676	3,913	+ 42.1	25,252,849	1,218	88	132	1,306	1,236	799
E.Tex.Border		3				3	4	2	19,888	8	9	14			31	18	+ 68.8	194,503	27	1	2	28	21	9
E. Tex. Field							1						1	3	4	5	— 21.2	4,509						
R. of E. Tex.	4	3	17			24	19	32	112,340	116	8	132		2	258	228	+ 10.8	1,522,872	50	5	13	55	58	51
North	64		60	2	3	129	110	109	354,083	628	8	605	19	37	1,297	980	+ 29.6	3,792,254	156	10	13	166	142	126
West Central	17	2	30	1	4	54	33	37	121,533	154	9	211	2	19	395	354	+ 9.3	933,816	65	5	45	70	62	52
West	145	3	25		3	176	143	98	615,123	1,193	12	247		52	1,504	872	+ 69.0	6,588,928	423	29	54	452	462	289
Panhandle	34	13	4		1	52	37	17	159,732	191	39	30		2	262	180	+ 42.6	820,825	180	10	8	190	167	48
Upper Coast	32	9	25	1		67	59	35	463,957	295	38	216	1	10	560	302	+ 81.6	3,996,146	115	9	2	124	118	82
Lower Coast	54	5	15			74	63	49	485,693	508	66	273		3	850	579	+ 43.8	5,412,627	123	11	6	134	141	93
Southwest	28		19			47	33	27	181,346	181	20	215		2	418	337	+ 21.5	1,674,857	64	6	1	70	39	36
S. Central	3		5			8	10	6	21,250	29	1	66		1	97	58	+ 63.9	311,512	23	2		25	26	11
Utah												1			1			4,743				5		2
West Virginia	6	79	9		1	95	87	61	254,598	78	701	116		2	897	630	+ 39.5	2,317,093	98	16	24	114	126	60
Wyoming	10		2			12	16	8	54,404	131	2	21	1	1	156	111	+ 37.7	693,980	43	2	7	45	59	65
Total U. S.	1,307	259	656	161	39	2,422	2,111	1,760	8,683,349	12,055	2,105	6,216	1,741	349	22,466	17,388	+ 26.6	74,918,444	3,766	386	437	4,174	4,167	3,261

* Includes distillate wells. [1] Wells completed in 5 weeks, or 35 days, ended Dec. 2, 1944. [2] Wells completed in 4 weeks, or 28 days, ended Nov. 27, 1943. [3] Wells completed in 4 weeks, or 28 days, ended Oct. 28, 1944. [4] Wells completed in 49 weeks, or 343 days, ended Dec. 2, 1944. [5] Wells completed in 48 weeks, or 336 days, ended Nov. 27, 1943. [6] Water input, gas injection, and salt water disposal wells.

WEEKLY in its forecast, a year earlier, of drilling in 1943, which was within a fraction of 1 percent of actual completions for that year.

Most states and districts have had more drilling this year than last year, exceptions including Arkansas, North Louisiana, and Nebraska. Above-average increases have included those of 42 percent in Texas, 37 percent in California, 40 percent in South Louisiana, 120 percent in Mississippi, 86 percent in Kentucky, 45 percent in Montana, 54 percent in New Mexico, 40 percent in West Virginia, 38 percent in Wyoming. While all Texas districts show increases, outstanding gains included those of 69 percent in West Texas, 82 percent in the upper Gulf Coast, 44 percent on the lower Gulf Coast, and 64 percent in South Central Texas.

Texas Legislators Hold Pre-Session Conference

An indication of the possible attitude of the forthcoming regular session of the Texas Legislature was given at the gathering of a number of Texas representatives in Fort Worth on December 9 and 10. Inasmuch as there could be nothing official about such an informal meeting, with less than 50 of the representatives present, no formal resolutions were presented or adopted, but apparently the emphasis desired at the session will be on postwar planning for development of Texas industry, including natural resources. Regarding natural resources, Representative William C. Montgomery of Houston, and other members of the Harris County delegation expressed themselves as strongly opposed to the Anglo-American oil pact, an opposition shared by the majority of those present and there will likely be a formal resolution adopted at the regular session in opposition of passage of any such measure by the Senate. Those present recognized the fact that the treaty is being sidetracked by the Senate foreign affairs committee, but fear that any substitute might be equally as dangerous if signed and ratified as a treaty.

Other talks by members suggested a program of expansion of the natural resources of Texas, but nothing definite was touched upon. There was no mention as to the need for, or possibility of, any changes being made in the existing conservation laws.

Says Language of New Pact Needs Some Clarification

Railroad Commission Chairman Beauford Jester of Texas has signified his approval of PIWC's suggested revision of the Anglo-American petroleum agreement.

Jester thinks, however, the language of Article V which states "upon such publication by our government, any action taken in compliance therewith shall not be deemed an infringement of its laws with reference to restraint of trade" should be clarified.

"This country certainly does not want to be a party to any agreement that would supersede our anti-trust laws and laws in restraint of trade," he said.

☆

WALTER CRANDALL, engineer for Sinclair Prairie Oil Company, has been promoted to assistant division superintendent at Tulsa, succeeding C. S. Rose, who has been transferred to the company's West Texas division at Midland in the same capacity.

T-G-T Proposes Plan That Offers Market For Additional Texas Gas Being Wasted

At least 42,000,000 cubic feet of natural gas which is now being wasted daily in Texas, or which is without a market, will be put to use under proposals filed with the Federal Power Commission by Tennessee Gas and Transmission Company which recently placed its Texas-West Virginia pipe line into operation.

Gardiner Symonds, president of Tennessee Gas, petitioned the Federal Power Commission for authority to build 4½ to 10¾-inch pipe lines to connect its main transmission lines with 11 Texas oil and gas fields now having no outlet and stated that the maximum daily take may run as high as 151,000,000 cubic feet a day. The company has asked for an early hearing.

This gas would augment the reserves of Chicago Corporation, which is supplying all the needs of the line. Chicago Corporation, with aid from the Reconstruction Finance Corporation, financed and constructed the 1265-mile line in response to a War Production Board ruling that 200,000,000 cubic feet of natural gas would have to be brought to the six-state Appalachian industrial area every day to prevent interruption of war production this winter.

Tennessee Gas officials estimate that in a ten-mile band on each side of their line in Texas more than 200,000,000 cubic feet of natural gas is being legally wasted every 24 hours in the production of crude oil. Since no market for this casinghead gas exists, it is vented and burned.

Under the proposals filed by Tennessee Gas, a minimum of 42,000,000 cubic feet of this gas would be recovered every day and put to economic use, being co-mingled with the company's present supplies. In addition Chicago Corporation is installing facilities at its Wardner Plant to gather and deliver 12,000,000 cubic feet daily for pipe line use.

The present reserves of Chicago Corporation are estimated at substantially in excess of two trillion cubic feet, or enough for at least 33 years, based on annual withdrawals at a rate of 75 percent of the Tennessee line's capacity. But the proposed facilities will aid in assuring Tennessee "a continuous and adequate supply to its customers," it was declared.

Subject to the approval of the Federal Power Commission and the War Production Board, Tennessee Gas proposes to make connections with gas fields and vented gas in the following Texas counties: San Patricio, Nueces, Jim Wells, Refugio, Aransas, Bee, Goliad, Victoria, Calhoun, Jackson, Wharton, Matagorda and Colorado.

The lines would provide facilities to move gas from the Odem field in San Patricio County; Riverside field, Nueces County; Quinto Creek field, Jim Wells County; Tom O'Connor and Refugio fields, Refugio County; Heard field, Bee County; Heyser, Placedo and McFaddin fields, Victoria County, and Menefee and Hungerford fields, Wharton County.

Louisiana Opposition to Memphis Plans Blocked

The Federal Power Commission has denied a motion by Panhandle Eastern Pipe Line Company for dismissal of an application of the Greenfield Gas Company, Inc., for authority to construct approximately 5 miles of three-inch pipe line from Fortville, Indiana, to a connection with Panhandle's four-inch branch line to Greenfield, Indiana, and issuance of an order requiring Panhandle to interconnect with and deliver gas to the proposed line. A hearing was ordered on the application at Indianapolis December 21.

FPC denied application of the Louisiana Public Service Commission for a stay of the FPC order permitting Memphis Natural Gas Company to construct additional gas pipe lines to serve the Memphis area. Louisiana officials objected to the company piping gas out of the state.

The company has been authorized to loop its line from Monroe, Louisiana, to Memphis and to build a new line from the Lisbon, Louisiana, producing area to tie in with the Monroe loop.

Texas Mid-Continent Oil Group Convention Dates

Texas Mid-Continent Oil & Gas Association will hold its 1945 convention on October 4-5-6, at Houston, with headquarters in the Rice Hotel.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Dec. 16	Dec. 9
Alabama	250	250
Arkansas	80,700	80,100
California	885,000	885,500
Colorado	8,900	8,150
Florida	50	50
Illinois	196,400	203,300
Indiana	13,750	13,050
Kansas	267,100	267,350
Kentucky	29,950	31,700
Louisiana	360,800	361,950
North Louisiana	71,150	72,300
South Louisiana	289,650	289,650
Michigan	52,900	47,700
Mississippi	52,100	48,050
Missouri	100	100
Montana	22,900	23,340
Nebraska	1,050	1,050
New Mexico	105,700	105,700
New York	13,200	13,500
Ohio	8,450	8,150
Oklahoma	358,200	360,350
Pennsylvania	34,400	38,350
Tennessee	35	35
Texas	2,111,550	2,111,550
Upper Gulf Coast	552,900	552,900
East Texas Field	371,000	371,000
Rest of Eastern Texas	141,450	141,450
Lower Gulf Coast	246,450	246,450
Southwest Texas	79,000	79,000
South Central Texas	20,100	20,100
West Texas	471,300	471,300
North Texas	140,600	140,600
Panhandle	88,750	88,750
West Virginia	7,750	8,100
Wyoming	96,950	94,500
Total United States	4,708,185	4,711,875

Conservation and Threat of FPC Natural Gas Probe Talked by Compact

Mississippi oil men last week were hosts at Jackson to the mid-winter meeting of the Interstate Oil Compact Commission. Attending the three-day session were some 200 oil men, members of state oil regulatory authorities, and the governors of Mississippi, Kansas and Oklahoma.

Conservation of the state's natural resources was stressed in the address of welcome delivered by Governor Thomas L. Bailey. He pointed out that the attitude of the state had changed materially in the past few months, and indicated that a better system of regulatory practices might now be acceptable to Mississippi.

Governor Robert S. Kerr of Oklahoma explained the objectives of the compact and emphasized the fact that its purpose is to exchange ideas between the states on conservation questions so that all might benefit from pooling their knowledge.

The compact hopes to add Mississippi, Alabama and Florida to its membership.

FPC Gas Probe

Most important behind-the-scenes problem was the attempted encroachment of the Federal Power Commission in the field of control of natural gas. Opposition to the Overton resolution, now pending in Congress, was voiced by several of the state representatives. Under this resolution the Federal Power Commission would be given $100,000 with which to study United States gas reserves, and determine whether proper "use" is being made of gas now. Just who is to determine what use is proper and what standards will be applied, has not been disclosed.

FPC has indicated it fears a shortage of gas, but Ernest O. Thompson of the Texas Railroad Commission pointed out that known reserves are in excess of 93 trillion feet, which does not include the new Carthage field in Panola County, Texas, which now embraces more than 100,000 acres with four or five productive horizons.

Thompson thought that other discoveries of this magnitude are entirely possible, and that there was little cause for concern now. He expressed the opinion that gas may become obsolete as a fuel by the time known reserves are exhausted, because of the development of synthetic fuels from various sources, notably coal, the reserve of which in this country is estimated to be sufficient for three thousand years.

Petroleum engineers likewise leaned to this view, pointing out that even in case of war, sufficient petroleum could be supplied synthetically to meet any possible demand.

Dr. John J. Grebe, director of physical resources for Dow Chemical Company, forecast better days for the South through the diversification of crops and new developments in chemistry that would expand the demand for its natural resources. He declared that the combination of chemistry and petroleum was capable of "an almost staggering list of valuable products from southern resources."

The Compact Commission has named Carl Foster as its secretary. He succeeds Charles Orr who resigned several months ago.

On December 14, some 60 Mississippi operators formed "The Mississippi Oil and Gas Engineering Committee." Its purpose is to assemble and correlate technical data from all fields in the state. H. M. Morse, supervisor of the Mississippi Oil and Gas Board, is an ex-officio member of the committee.

A. M. Crowell, consulting petroleum engineer and former director of production of the Arkansas Oil and Gas Commission, was nominated as director by the group to supervise the work on a full-time basis. D. V. Carter, Magnolia Petroleum Company, was named temporary chairman. Final organization plans will be discussed in Jackson January 12, to which the following companies will send representatives: Gulf Refining Company, The California Company, The Carter Oil Company, Union Producing Company, Sun Oil Company, H. L. Hunt and Frankel Brothers.

Why U. S. Leads in Oil

The Interstate Oil Compact Commission will meet "tremendous opportunities as well as great responsibilities" in the postwar period, when the time comes for the repressuring and careful management of our war-depleted oil fields, it was predicted December 16 by William R. Boyd, Jr., chairman of the PIWC, in his address. Paying high tribute to the commission, which he declared now may be regarded as a fixture in our American scheme of government, Boyd asserted that it was the ability of the states and the industry to get together that made it possible for the United States to oil the war with a minimum of government interference.

"As oil men," he said, "we are mighty proud of our record and the way we have cooperated with each other and with government in doing our job. The fact that the American oil industry now is accounting for 73 percent of the total world petroleum production should be ample proof that the way we are doing it is the right way; the way that produces real results in emergencies.

"Do we have superior petroleum resources? No. Are we a superior race with all the known intelligence? Of course not. Then what is it that we have had that the other nations of the world have lacked? Very simply, we have had a system of government that did not unduly restrict private initiative and private enterprise. As long as it is possible for us to maintain that governmental attitude, we will have necessary production of petroleum products in this country. The minute we abandon it, our petroleum resources will begin to fail."

PIWC, Boyd explained, parallels the commission as an advisory agency.

Boyd declared his confidence that in the postwar period "the conservation laws of the several oil-producing states will be maintained, strengthened if and where necessary, and that the same fair, wise and impartial administration that has occurred in the past will be continued.

"We are the guardians of tomorrow's oil and tomorrow's oil must be here in case of another national crisis such as this one," he added. "This is a war of petroleum and one of the reasons we are winning it is that we have the most and the best petroleum products.

"I look forward to the not far distant day when men of vision and courage, who are willing to risk their capital, will be able to prospect for oil anywhere in the world on a basis of free and open competition. That can be done. I think this Interstate Oil Compact Commission is the model for any international agency that may be created."

Talks About Oil Pact

Outlining the recent report of the national oil policy committee, Boyd declared it "contains about all that needs to be said for not only a national oil policy but an international oil policy as well. If the nations of the world want a sound oil policy, that's it. By trial and error, the petroleum industry of the United States has learned these things and has made those principles work. No other system has worked half so well."

Land under lease by persons interested in prospecting for oil and gas in Georgia, totaled about nine million acres, on October 1, 1944, Garland S. Peyton, director Georgia Department of Mines, Mining and Geology said. This acreage is held by approximately a dozen of the major oil companies, with smaller holdings being held by some of the larger independent producers and certain syndicates or groups of individuals. The average rental paid for leases ranged from 5 to 15 cents per acre, two years ago. During the present year, prices have jumped to as much as 50 cents an acre, with an average of twice that paid formerly. In addition to leasing, there has been considerable dealing in royalties, in most instances by outright purchase of one-half the owner's royalty rights.

Several of the larger companies have kept geophysical crews busy throughout the year on prospective holdings. It is understood that results of these surveys have made possible the selection of sites offering greatest possibilities for wildcat drilling.

Mississippi Discoveries

In Mississippi, during a period of five years, ten new fields have been discovered in addition to the original Tinsley field, it was revealed in a paper read by W. C. Morse, director, Mississippi Geological Survey. These include the Vaughan-Pickens, the Cary, the Cranfield, the Brookhaven, the Flora, the Eucutta, the Heidelberg, the Mallalieu, the Gwinville, and the Baxterville. Before that time she had two gas fields, the Armory and the Jackson. Since that time, in November in fact, another gas field has been discovered, the Bruinsburg.

In addition to the two original gas fields and the three original oil fields, Mississippi has, therefore, in two years discovered eight new oil fields and one new gas field. It is startling to realize that before Mississippi is well launched on a state-wide oil development, however, that her first oil field and thus far her most productive one, has in four years reached its zenith and passed into decline. From its discovery in August, 1939, production of the Tinsley field rose to a maximum of 28,000,000 barrels in 1942 and declined to 17,000,000 barrels in 1943—yielding a present cumulated total of about 75,000,000 barrels.

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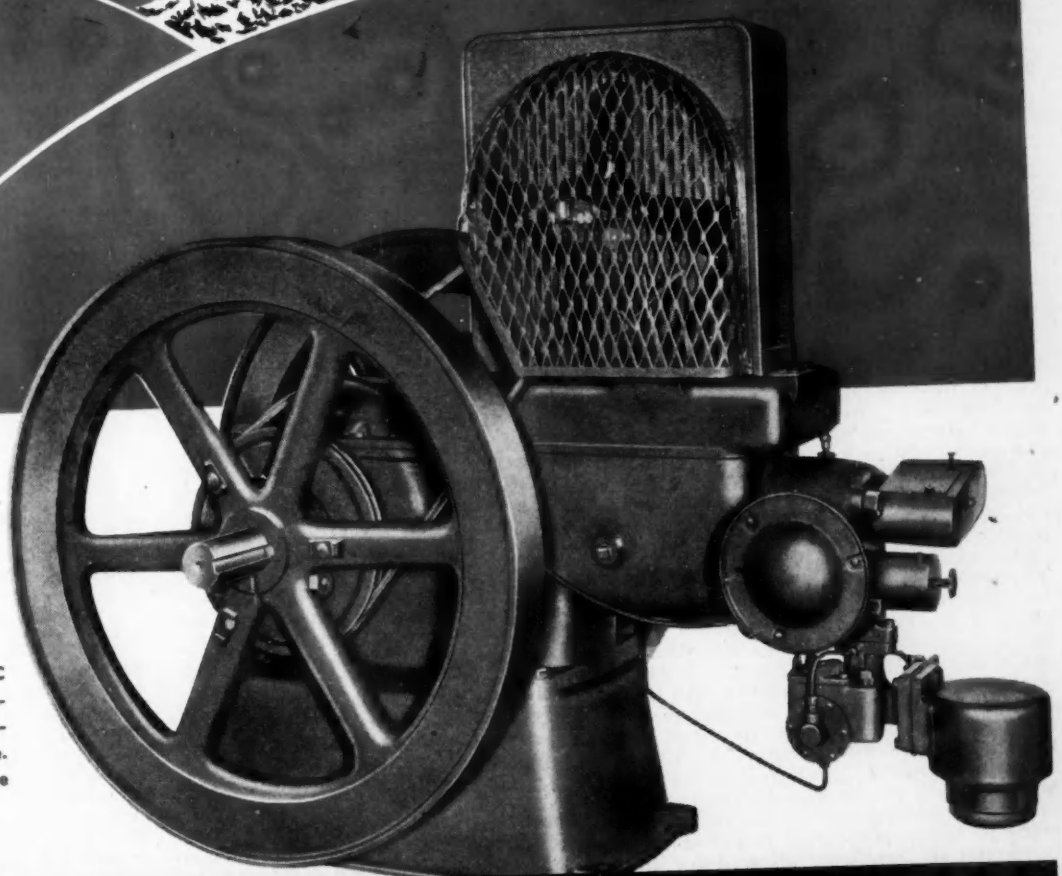

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Castings from High-Strength Steel Welcomed by Oil Industry

Cast alloy steel gives higher strength and toughness besides uniformly high quality castings that are free from defects. These castings can be made to required dimensions with minimum of machining and the maximum efficiency at places of highest stress

By C. H. HOMER, JR.
Chief Metallurgist, Beaumont Iron Works Company

STEEL castings have found wide application in the drilling, producing, and refining of oil. There are few industries which put materials of construction to such severe services as this one, and the wide acceptance of steel castings by the oil industry is proof of their quality.

For more than 40 years, as oil wells were drilled deeper and faster, and as higher formation pressures were encountered, the drilling equipment and producing assemblies have been required to meet ever-increasing standards of durability. From the crude, wood-supported drawworks of 30 years ago, the modern precision built unitized rig has been evolved. Every part of this unit—clutches, shafts, brake drums, sprockets, bearings—is tailor made to give maximum service. The physical properties of many of the metal parts would have been considered impossible to attain 30 years ago.

Similarly, while cast iron casinghead fittings were at one time quite satisfactory, the material for this service has been revised successively to cast or forged carbon steel, thence to cast alloy steel of higher strength. Today the requirement is for alloy steel of exceptionally high strength and toughness, and for castings of uniform high quality, free from defects.

Advantages of Steel Castings

As the industry improved its technology, emphasis was placed upon the production of oil at maximum efficiency. Thus, with the disappearance of the days of the "gusher," and haphazard production from supposedly boundless reservoirs, the fittings which form the well head and Christmas tree assemblies became increasingly intricate and massive in order to permit closer control of fluid flow. Steel castings are the logical structural parts for many applications of this kind, because castings can be made to conform to dimensional requirements with a minimum of machining operations, and with a maximum efficiency in the location of heavy metal sections at places of highest stress. The problem can now be solved largely by engineering principles. That is, experience has described ranges for the stresses, corrosion conditions, etc., which can be expected to be encountered. The shape of the required assembly, and the necessary strength of the material in it, can be calculated. It is the problem of the equipment manufacturer to fulfill these requirements. But regardless of how carefully the expected stresses are calculated, sudden, unforeseen events in many instances place higher stresses on the material than were allowed for in the specifications. Consequently, there is no record of an objection to a material which exceeded specifications.

Gradually, there has been written a set of manufacturing standards for well head equipment, which gives the engineer a working basis for design calculations. For example, the Association of Well Head Equipment Manufacturers requires that all approved steel castings for well head assemblies used at working pressures of 1500 pounds per square inch and over shall have minimum physical properties in tension as follows:

Yield point, 65,000 pounds per square inch.

Ultimate strength, 100,000 pounds per square inch.

Elongation in 2 inches, 18.0 percent.

Reduction in area, 30.0 percent.

Rigid Inspection Required

There are many technical problems involved in the production of high quality steel castings in a modern steel foundry. Great strides have been made in the industry during the past few years; improvements in molding materials and techniques, in the design of feed heads and gates to make sounder castings, and in the inspection of the product. The physical properties of a test specimen made and heat-treated with a casting are representative of the true durability of that part only if the casting itself is properly made and heat-treated, and is free from gross defects such as tears, shrinkage porosity, or slag spots. Extreme care in manufacture and rigid inspection are absolutely necessary. Radiography of steel castings for hidden defects is a new inspection tool which increases immeasurably the assurance that the product is sound and serviceable.

The *sine qua non* of a steel casting is, however, the metal of which it is made. This is steel, made in an electric arc furnace, and heat treated to meet the purchaser's specifications. Steel is, essentially, "an alloy of iron and carbon, initially malleable as cast." That definition embraces an endless series of alloys, varying in properties from dead soft ingot iron to the high speed tool steels.

In most steels, the physical properties are dependent chiefly upon two variables: 1) the amount of carbon present, and 2) the heat treatment to which the metal is subjected. A third factor is the amount and kind of alloying elements present.

Carbon exists in most steel at ordinary temperatures as iron (or alloy) carbide crystals scattered among crystal grains of substantially pure iron. The number and the state of dispersion of these carbide crystals are the determining factors for the strength, hardness, and ductility of the steel. The more carbide present, and the more finely it is divided, the stronger will be the metal. In general, ductility, measured by elongation and reduction in area, decreases with increasing strength (hardness). The amount of carbide present is, of course, proportional to the carbon content of the metal. The state of dispersion of the carbide phase is determined by the heat treatment given the steel.

The iron crystals in steel are known as ferrite. They are very soft and ductile. The carbide crystals, which are called cementite, are extremely hard and brittle. Steel can be considered to be composed essentially of these two substances, knit together in a mass of microscopic particles. When the metal is stressed, yielding occurs, at a load which is loosely defined as the "yield point," within and between the ferrite crystals. The presence of carbide particles, acting as blocks in the way of flow, increases the stress required to cause yielding. Steel of a given carbon content has its highest strength when the carbide particles are in the highest state of dispersion.

The problem in producing high-strength steel is, therefore, that of producing a high state of subdivision of the carbide particles. This result is accomplished by heat treatment and alloy additions.

Given Heat Treatment

Heat treatment of steel is possible because of the peculiar behavior of iron-carbon alloys at high temperatures. Between 1325 and 1675 degrees Fahrenheit, depending on the steel analysis, iron undergoes a change in crystal structure which results in the assimilation of the carbide phase by a new set of iron crystals which are formed on heating. The resulting solid solution of carbide in iron is called austenite, and the temperature range through which it is formed on heating is known as the critical range. If austenite is cooled slowly through the critical range, the iron changes its crystal structure, rejects most of the carbon dissolved in it, and becomes ferrite. The carbon rejected forms a separate set of crystals of cementite. Slow cooling results in large crystal grains of both ferrite and

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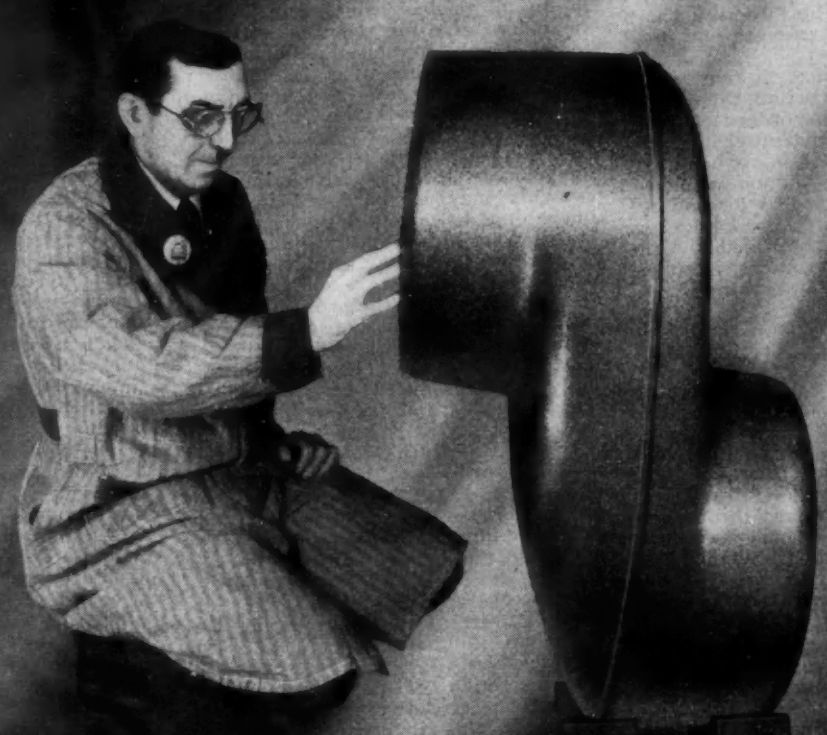

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cementite, in a peculiar arrangement of alternate lamellar crystals of the two which is known as pearlite. A steel having a structure composed of coarse pearlite mixed with ferrite has comparatively low strength, with fairly high ductility and toughness.

If austenite is cooled rapidly through the critical range, the formation of coarse pearlite is prevented, by lack of sufficient time. Instead, carbon and iron form a substance known as martensite, in which the carbon, or carbide particles are highly dispersed among the iron crystals. In martensite, the yield point, tensile strength, and hardness are very high, while the ductility is very low. Martensite is usually tempered, or reheated to an intermediate temperature in the range 300-1300 degrees Fahrenheit. Tempering results in agglomeration of the carbide particles into larger grains. The structure has a combination of high strength and good ductility.

Research has indicated that every steel has a critical cooling rate which must be exceeded in order to bring about hardening by the procedure outlined above. Many steels must be water-quenched, some may be oil-quenched, and others are hardened by air cooling. This variable property is known as hardenability. It is controlled by the carbon content, the content of other elements (alloys), and the grain size of the steel.

Alloy Steels More Ductile

Alloys are most frequently added to steels in order to make the change from austenite to ferrite and pearlite occur more sluggishly during the cooling stage of heat treating operations. By alloy additions to the steel, heavy sections of it can be hardened throughout in the quench, or the quench itself may be less drastic. Another advantage of alloy steels is that, in general, they are more ductile than plain carbon steels at a given strength level.

This brief discussion of the metallurgy of steel is given in order to clarify problems encountered in producing a high-strength steel casting. Our company introduced into the oil industry in 1941 a high-strength alloy cast steel which embodies several interesting developments in the application of metallurgy. This steel began its usefulness as a substitute—a "warbaby"—but in the space of three years it has shown such desirable qualities that its producers are proud to recommend it as a distinct advancement in the field of high tensile steel castings.

In making steel for a well head casting to conform to the AWHEM specification of 100,000 pounds per square inch tensile strength, etc., the producer must apply the metallurgical principles outlined above. The metal section in castings of this type varies from less than 1 to 5 or more inches in thickness. Strength and ductility must be uniformly high throughout these varying sections. In addition to strength, the metal must possess such additional properties as ease of casting, heat treatment, and machining, and weldability. Because many castings are parts of welded units it is important that the metal in them can be fusion-welded without danger of cracks or brittleness in the weld zone.

The most important design factor in a well head casting is the yield point, since stresses above the yield strength of the material result in permanent deformation and render the casting unfit for further service. Particular attention must be given to this property.

An alloy steel is indicated to meet these requirements. Plain carbon steels in heavy sections can not be satisfactorily heat-treated to meet the physical specification. A high-carbon steel could be annealed (furnace cooled) to have yield point over 65,000 pounds per square inch, but the ductility would be low, and the metal would be extremely difficult to weld.

Before Restrictions

The addition of manganese, nickel, chromium, molybdenum, and other alloys, in amounts totaling possibly 3 percent, together with a low-carbon content of about 0.3 percent, will result in an alloy steel which can be heat treated to give the required properties. Our company produced a nickel-chromium-molybdenum steel of this type for several years prior to the war, with good results. The carbon content was a trifle too high for easy weldability, but that disadvantage was considered unavoidable. Steels with lower alloy contents may be hardened by water quenching to meet this specification, but the varying cooling rates in different sections of the same casting sometimes cause cracks which are difficult to detect. There is, also, the problem of cooling an extremely massive section rapidly enough, even by water-quenching, to harden it sufficiently. The nickel-chrome-moly steel produced by some plants was air-cooled and tempered, for these reasons.

In April, 1941, the government issued the first order restricting alloy steel making, in order to conserve critical metals for the defense program. This order so limited the amount of nickel allowable that it threatened to stop entirely in some plants production of alloy steel for the oil industry. Subsequent orders limited chromium, molybdenum, tungsten, aluminum, and other elements.

Investigation of possible substitute alloys was already under way. The course of this investigation led, deviously, to a somewhat less publicized alloying element for steel, namely copper.

For some 50 years copper has been known to cause certain peculiar effects when it is alloyed with steel. Many thousands of tons of steel containing about 0.25 percent copper have been produced as rolled plate and structural shapes. Even this small amount of copper can materially enhance the resistance of steel to corrosion in the atmosphere. Considerable tonnage of steel castings containing higher quantities of copper have been made for heavy machinery parts, but the writer knows of no previous case in which copper alloy steel castings were produced for the oil industry.

Behaves Like Nickel

In many ways, copper behaves like nickel in steel. It acts in a mild way to make the change from austenite to ferrite plus pearlite more sluggish, thus increasing the hardenability. Copper, however, has one effect which is almost unique to this element. It behaves in a manner similar to that of carbon, in that it forms a separate set of crystals at low temperatures, while at high temperatures, it dissolves completely in the iron crystals. Thus copper, too, can act under certain conditions as a hardener in steel, by forming small crystalline grains of nearly pure copper, which, scattered between the larger grains of ferrite and pearlite, prevent intergranular and transgranular movement of the iron crystals. These blocks of copper get in the way of the blocks of iron when stress is applied. Thus the stress required to cause deformation of the alloy is increased.

Again, like carbon, the state of dispersion of copper in iron is dependent upon heat treatment. But an important difference exists. When a carbon steel is cooled rapidly enough a hard material called martensite is formed. The assumption is that carbon is precipitated from the iron crystal at some time during cooling, the result being a mass of iron crystals in which there is dispersed an extremely large number of very small carbon or carbide particles. Copper, on the other hand, does not precipitate from iron nearly so easily. If a heavy section of copper steel is cooled from 1600 degrees Fahrenheit in a furnace, with the doors closed, precipitation of copper will occur. If, however, this same section is removed from the furnace at 1600 degrees Fahrenheit, and allowed to cool in still, cool air, there will be an insufficient time interval for the copper to precipitate, and it will remain dissolved in the iron at room temperature. The metallurgical structure is not in equilibrium, but it will remain unchanged indefinitely, unless an opportunity is given for the copper to take its more stable, separate form. Such an opportunity is afforded if the copper alloy, which has been air-cooled, is now reheated to a temperature between 600 and 1200 degrees Fahrenheit for a period of several hours. In this temperature range, the atoms of copper become active enough to separate from the iron crystal, forming, first, extremely small particles of a separate solid phase of copper, so small they can not be resolved by the microscope. Further heating results in the agglomeration of these small particles, with some softening and increase in ductility.

Effects of Copper in Steel

Thus the hardening effect of copper in steel is two-fold. First, it behaves like nickel in increasing the hardenability due to the carbon present. Second, and more important, copper acts in addition to carbon as a precipitation hardening element. Non-copper-bearing steels are hardened by a rapid cool, and softened by reheating (tempering). Copper-bearing steels are not hardened until they are reheated. Steels containing more than about 0.50 percent copper show this effect.

The possibilities of this anomalous metallurgical occurrence are very interesting. Principally the behavior of copper gives a clue to the solution of one problem which has plagued steel producers for many years, namely, the hardening of heavy metal sections. Extremely rapid cooling (quenching) with its attendant difficulties of possible cracking, is not necessary to harden steel by copper precipitation. Simple air cooling, followed by reheating, is sufficient.

Also, it is possible to use a steel of very low carbon content in high-strength services. Since carbon has the greatest harmful effect upon weldability, a low

• CONTINUED ON PAGE 24

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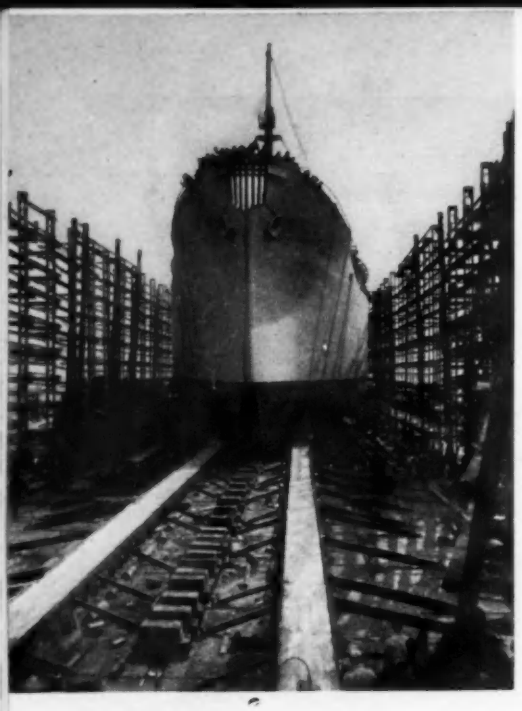


At left—Esso tanker launching
At Chester, Pennsylvania

Rather than using its huge fleet of oil tankers, built to prosecute war on farflung fronts, to monopolize the transportation of oil, United States likely will supply ships needed by deserving countries which had prominent roles in this field before Pearl Harbor. Requirements of domestic coastal terminals will require a number of vessels with salvage likely for remaining surplus.

By DON L. CARROLL, Staff Writer

U. S. In Position to Capture Postwar Tanker Trade

THE tremendous growth of the American tanker fleet under the wartime building program has created a situation that may lead to United States control of world oil transportation and to virtual elimination of railroad tank car competition in long distance hauling in the United States.

By the end of 1944 our shipyards will have completed approximately 700 of the new-type, fast tanker vessels—all built since Pearl Harbor. Their average size is 15,700 deadweight tons. These ships, added to our prewar tanker fleet, will bring the United States total to 1070 vessels—an aggregate of 15,000,000 tons. This compares with a total world-wide prewar tanker tonnage of 17,000,000 tons, a large percentage of which has been sent to the bottom. Moreover, the present United States total is exclusive of the many small coastal tankers built during the war period, and does not include the 100 Liberty ships converted into oil carriers.

The rate at which the American tanker fleet has been expanding can be judged by the fact that 16 long range tankers were put into service during August. Meanwhile, none of the other nations have been able to make up their sinking losses, and they are now well below their prewar positions in this category.

Tanker Leaders

The five major prewar tanker operating nations, in the order of their importance, were: Great Britain, the United States, Norway, Holland and Panama (by registry, at least). Under the flags of these five countries 77 percent of the world's tanker fleet was operated. For all practical purposes, however, we should refer only to the "Big Three," since Holland was a poor fourth, with only about 20 percent as much tonnage as Norway, and the Panamanian fleet was more or less a subterfuge.

Norway and its tanker fleet demands sympathy. Before the Germans occupied Norway its tanker fleet numbered 272 units. These efficient vessels were operated, not in competition with those owned by British and American interests, but as a welcome adjunct, taking over routes they could not conveniently handle themselves, and generally "cushioning" supply and demand.

Fortunately, no more than 22 Norwegian tankers were caught in Scandinavian ports by the German invaders. The remaining 250 were engaged for the Allied cause—carrying aviation gasoline, diesel and bunker oils, lubricants and other petroleum products to England, chiefly from the United States and the Caribbean. Since the beginning of the war this fleet has been reduced at least 50 percent by enemy torpedoes and bombs. Obviously, the Allies are honor bound and economically bound to restore it to normal size as soon as possible. Norwegian prosperity depends upon it and America depends on Norwegian prosperity more than many realize. Norway probably will prefer to rebuild the fleet according to her own standards and specifications.

Before the war, practically 50 percent of available worldwide tanker capacity was required for operations in the western hemisphere. In the postwar period the American tanker fleet will not only be well able to take care of these requirements, but would be available to overcome any deficiencies that may develop in handling export oil from many other parts of the world, if such use of our vessels is allowed under international agreement. Development of the oil reserves of the Middle East is being taken for granted in the industry. Practically all of this oil must be exported, either as crude or products. Whose ships are going to carry it?

The answer to this and other questions regarding the postwar fate of our gigantic tanker fleet depends on decisions to be made in Washington, since the government is the owner or operator of the vessels. Will our government retain ownership of its tanker inventory? Will it sell or give them to foreign nations to make up for their war losses; or will it turn them over to established American firms to operate on a private and competitive basis? Will many of the vessels be junked after the war, a sacrifice on the altar of international equity and harmony?

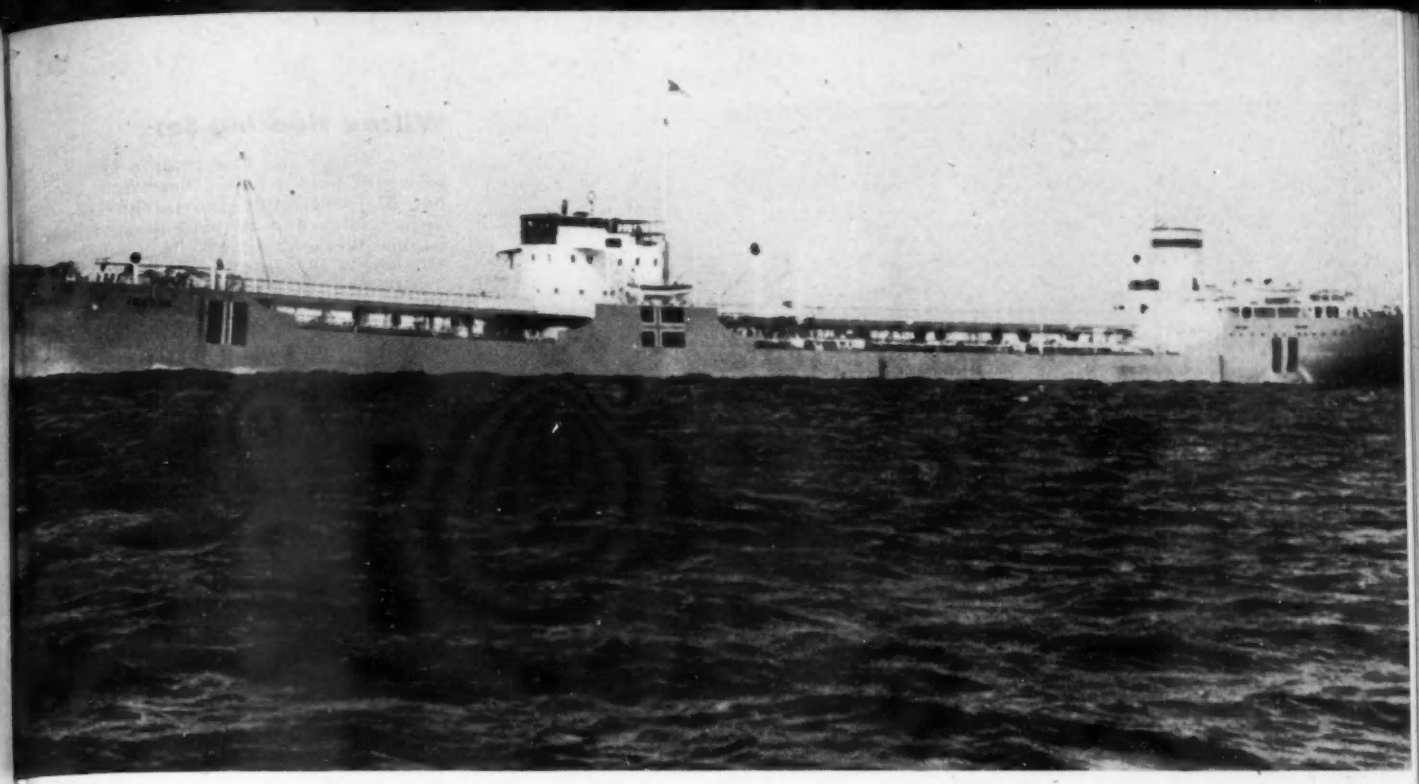
Suggests Peacetime Basis

B. B. Howard, manager of the marine department of the Standard Oil Company (New Jersey), advocates that the government give immediate consideration to this problem, and that it plan restoration of the oil tanker industry to an adequate peacetime basis, under private ownership and control, as soon as possible after the war. He declares that these modern, speedy vessels could be turned over to capable American oil companies on a fully equitable basis.

In this connection, he says, "It should be remembered that American tankers, under private ownership and control, are the most efficiently operated and make the quickest turn-arounds of any similar cargo carriers anywhere in the world . . . It should be borne in mind, too, that such new vessels (under American operation) would of necessity be maintained in the best of operating condition, and would always be available for government service if emergency required."

He advocates the following objectives for the United States:

1. Maintenance of a fleet of the best equipped tankers in the world, suf-



Tanker "Iselin," one of the latest model, streamlined vessels put into service in the Norwegian fleet. The vessel was launched in 1938.

ficient in size and number for national defense and economic security.

2. Continuation of a program already begun by the Maritime Commission for the sale of tankers to private owners on an equitable basis, and that there be no dumping of ships on the market at auction block prices.

3. Continuation of government training stations in order so the merchant marine may have the benefit of the best men available for sea duty in both licensed and unlicensed categories.

4. Resumption by the Maritime Commission of the constructive activities it had so ably set in motion before the war, in conformity with the provisions of the Merchant Marine Act of 1936.

Industry Favors Reduction

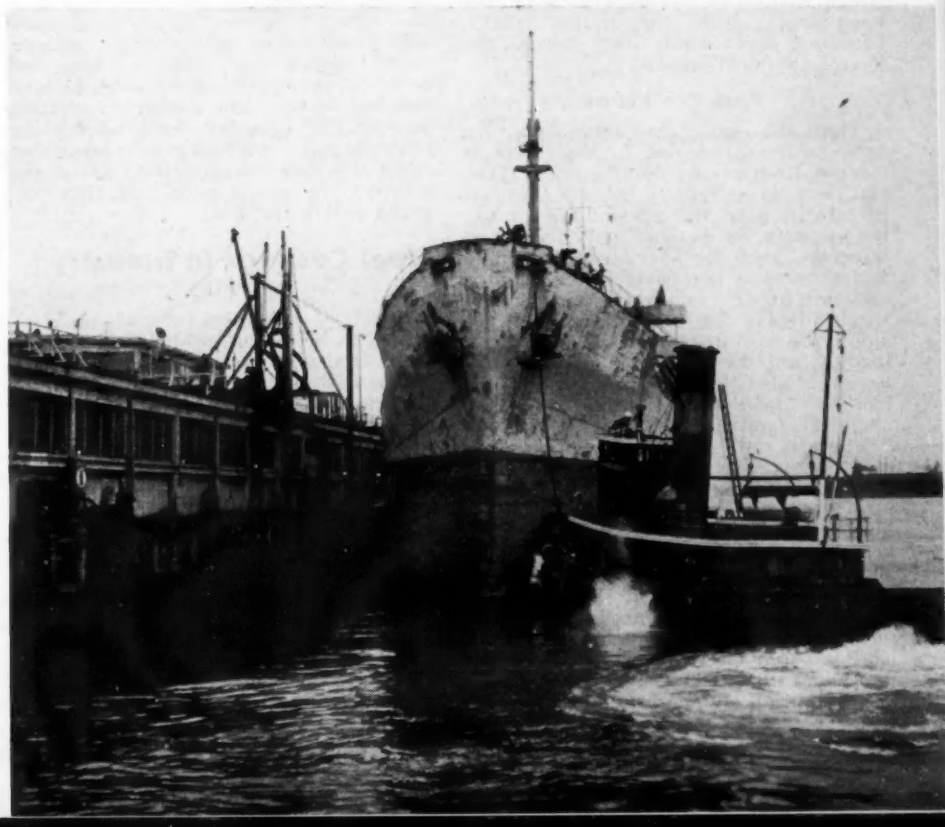
Howard has also said that after our government has determined the size of our postwar tanker fleet, the surplus tonnage should be disposed of to foreign interests or scrapped. In like manner Charles H. Kunze, general manager of marine transportation for the Socony-Vacuum Oil Company, says our excess of new tankers should not be laid up and allowed to rust, but that the surplus should be offered for sale or charter to our allies, even if the purchase prices are adjusted to lower foreign construction costs.

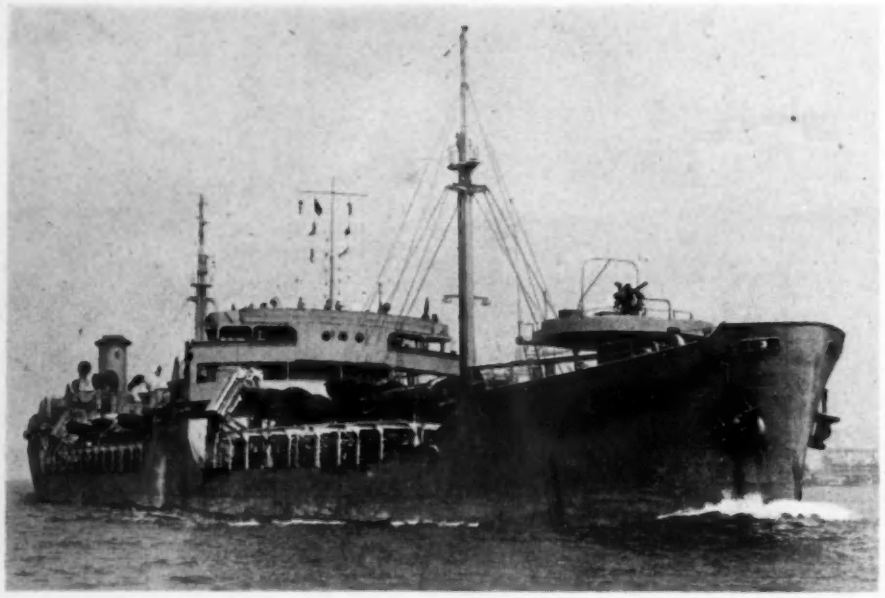
As far as foreign commerce is concerned it seems certain the United States will declare a policy of sharing business with favored nations, oil imports and exports included. The United States Maritime Commission has announced that its postwar goal is to have American ships handle 50 percent of American foreign commerce, giving foreign merchant marine nations every reasonable opportunity to handle the remaining half of our exports and imports. Whether this policy will be applied to separate categories of cargo types, or whether it refers to total foreign commerce tonnages has not been made clear. Our government's policy with regard to American tanker commerce after the war may not be enunciated until the final British-American oil agreement is formulated.

Incidentally, the topheavy position of the American merchant marine as a whole is revealed by the fact that this country had about 1300 cargo ships in operation in 1939, as compared with approximately 5800 at the present time. On the other hand, the other leading mercantile nations will come out of the war with their cargo fleets reduced to about half their prewar size. The American supremacy could be maintained for perhaps three years during the postwar period, before foreign maritime powers could rebuild to prewar levels, assuming that in the meantime they were to acquire none of our war-built Liberty ships, Victory ships or tankers.

Oil men in general regard possible competition from our overland pipe lines as the most important undetermined factor in the use of tankers after the war. Shortly before Pearl Harbor, more than half of this nation's tankers were engaged in coastwise trade, and were carrying 95 percent of the crude oil and products to the eastern seaboard states, from the Southwest and from South America. Obviously, United States is not going to need all the new pipe lines and tankers to supply this market after the war.

Tanker "Esso Raleigh" leaving Standard Oil Company (New Jersey), Bayonne, New Jersey berth.





United States T2 tanker with full load and deck jammed with fighter planes moving out to her convoy rendezvous.

United States tankers alone could do the job, and likely will do so, since it is becoming more evident that the coal and railroad interests, between them, plus the pressure of organized labor, will succeed in preventing the postwar use of both the Big-Inch and Little Big-Inch lines for transporting oil, or natural gas to the eastern states. It seems safe to assume the east will be supplied by tanker, and the central states mostly by pipe line from the Southwest and Mid-Continent, where about 5000 miles of trunk lines have been added during the war.

This leads to consideration of the postwar role of the familiar American railroad tank car. Its outlook is far from rosy. It cannot compete with up-to-date pipe lines and tankers for long distance hauls. Thus, the tank car people will probably have to content themselves with such business as they can keep away from the motor trucks, handling short hauls and shuttle deliveries to local outlets.

Tank Car Future

That the tank car companies are more or less resigned to their fate is evident from recent developments. One company is diligently engaged in an investigation of the possibilities of using its cars for hauling bulk industrial minerals, such as special sands, clays and other fine materials which require moisture-proof transportation. This would involve the installation of "teats" along the bottoms of the cars for unloading into hoppers. Loss of oil traffic may also be partly made up by hauling more and more industrial chemicals and liquid plastics.

There is only one way in which tank car companies can make sure they will retain oil business, and that to get into the oil business and haul their own oil. The North American Car Company is doing just that, and has acquired 50 percent rights on some 40,000 acres of leases in Kansas and Texas. There are 27 producing wells on properties in which this company has leasehold interests, yielding a total of apporximately 800 barrels daily under proration regulations, but potentially capable of producing 4000 barrels. This company is aggressively expanding its oil interests, and may be able to keep most of its tank cars in operation. So far, however, this solution can not be applied to the problem for tank car operators in general.

Scrapping Probable

To summarize: in the postwar period this country will probably make no attempt to capture the oil transportation business of the world, as it could do. Rather, it will supply the ships that are needed by the deserving countries which were prominent in this field of enterprise before the war, so they can play their customary roles in serving world markets. A surplus of tankers will remain, and probably will be scrapped as salvage. These vessels will likewise take care of virtually all business to terminals on the three coasts of the United States, while pipe lines will handle most of the long distance traffic within the country, from oil field to refinery and between inland refining centers and major distributing points. The gleanings will be left for tank cars and trucks to fight over, but there will not be enough to allow the railroads as much traffic as they enjoyed before the war.

Steel Castings In Industry

■ CONTINUED FROM PAGE 20

carbon is highly desirable in steels intended to be fusion welded. It has been found that a copper steel containing as low as 0.20 percent carbon can be satisfactorily hardened to give physical properties such as this:

Yield point, 82,900 pounds per square inch.

Ultimate strength, 104,000 pounds per square inch.

Elongation, 22.0 percent.

Reduction in area, 44.6 percent.

The high yield strength of the alloy is particularly noteworthy, as it represents an added safety factor over the design specifications. This high yield ratio is inherent in this particular steel.

Tests have been made to compare the physical properties obtainable in heavy and in light sections of the same metal, given identical heat treatments. Below are typical results of such test.

	Cast and treated in 1¼" section	Cast and treated in 4" section
Yield point, psi.....	86,600	83,000
Ultimate strength, psi..	106,500	99,150
Elongation, percent....	18.5	19.5
Red. in area, percent..	31.5	31.2

Brinell hardness tests over a cross section of the 4-inch test specimen showed a variation of only 9 Brinell points from center to outside, indicating that the effect of mass on physical properties is at a minimum in the copper alloy steel.

These test results surpass the AWHEM specification for high-strength well head castings. They are representative of several hundred heats of cast steel produced for the oil industry. In all its properties, this new alloy has been the equal or the superior to any made previously for this type of service.

Carefully Made and Inspected

However, merely specifying the alloy analysis and heat treatment is not sufficient to insure high quality steel castings. Close supervision and inspection must be maintained throughout the production history of each casting. The metal is melted to rigid chemical specifications, and heat-treated under closely controlled, standardized conditions. Each casting bears a permanent, integrally cast serial number which identifies it. Chemical analysis and physical tests are made on each heat of steel, and recorded so that the true properties of each casting are always instantly available.

Before machining, castings are radiographed by the gamma ray method. Radiographic inspection has two purposes. First, it is used to determine proper foundry practice for each pattern. Pilot castings from the first lot cast are examined, and any defects which appear are corrected by changing the location of feed heads or gates in the mold. In the second case, radiography is used to check highly stressed, or likely trouble spots, in every casting of certain patterns. The added assurance of trouble-free service is well worth the additional expense involved.

The specific analysis range and heat-treatment procedure for the steel produced by us is our own development. It is the author's belief that this application of a precipitation hardened copper alloy cast steel is the first in the oil industry. Copper steels, of somewhat different analysis from this one, have been produced for several years by certain manufacturers, and placed in various other types of service. The field of application of this steel will continue to broaden, as its remarkable properties become more widely known.

Wilcox Hearing Set

The Oklahoma Corporation Commission will hold a public hearing December 22 to determine advisability of revising rules and regulations pertaining to the Oklahoma City Wilcox zone pool. Hearing was recommended by Walker T. Pound, state conservation officer, who said the rules were written during the peak of development of the north half of the pool and immediately following the "hot oil" era, and are now out of date.

States Must Be Ready If They Would Regulate Oil and Gas After the War

Industry, opposed to federal control, is called upon to take a leading part in seeing that states have funds appropriated for adequate and efficient staffs for required regulatory activities. Postwar and all other oil and gas conservation groups are urged to get busy so that end of war will not find them unprepared for problems ahead

By R. W. BYRAM, Staff Writer

IF the states are to reassume the regulation of oil and gas after the war, they must be prepared to do so the instant war emergencies go. This means they must have an adequate and efficient staff, which in turn will require that there be sufficient finances available.

This is a matter of great importance to the oil and gas industries, opposed as they are to federal control, and they should be taking a leading part to see that these aims are accomplished. Otherwise, the national government may be provided with an excuse to continue control.

Postwar plans for regulation of the Texas oil industry by the Railroad Commission of the state are now under way at Austin. The oil and gas conservation agencies of other states should be doing the same thing, and the oil industry should be urging them to do so. The Texas commission does not intend to be caught unprepared when the war ends, and thus give Washington authorities an excuse to continue federal control.

Unprepared for Peace

Because of the war, most state oil and gas agencies have staffs wholly inadequate and in some cases incapable of efficiently performing their duties under peacetime conditions. The shortage of men, especially engineers, is not entirely responsible. Another factor has been low wage scales. The salaries generally paid were never too favorable, and have been entirely inadequate to compete with wartime wages offered by the federal government and private industry. It has been almost impossible to replace the loss of experienced men, for these reasons.

Furthermore, in several cases at least, the oil and gas conservation agencies have been operating during the war with reduced financial budgets. This is acceptable during the war, while the federal government is discharging many of the states' normal duties. But it is a condition that should not be allowed to continue. The agencies must be restored to financial positions in keeping with their peacetime needs.

Members of the oil industry, and even of state oil and gas conservation bodies, readily admit that federal coordination is necessary as a war measure, but are equally certain that a return to state regulation is desirable at the end of the war. They can do much to see that this is accomplished by initiating and supporting movements now that will provide means of correcting the situation as soon as peace comes.

The danger of inadequate state staffs being a factor in encouraging federal government regulation is seen by many as serious. Speaking before the Interstate Oil Compact Commission meeting in Oklahoma City last October, Beauford Jester, chairman of the Texas Commission, warned the state regulatory authorities of the threat. He insisted that the states must be prepared to do a better job in the field of regulation, especially conservation, if they are to recover their authority after the war.

"Every oil-producing state," Jester said, "should now be taking steps to insure and secure complete state regulation and control of its oil and gas at the end of the war. Unless this is immediately done, this Commission may be but a shell of a structure unable to stand and endure after the war.

"To meet the war emergency, the Petroleum Administration for War was created to coordinate the production, refining, transportation and use of oil for the war effort and civilian use. This was necessary and proper for the successful prosecution of the war with the petroleum of these United States, as the United Nations had to depend upon our country to furnish practically all of the oil and the vital oil products needed to carry out this highly mechanized war.

"The Petroleum Administration for War, known in this Alphabetical Era as 'PAW,' in its over-all administration of oil and gas, exercises regulatory powers formerly exercised and which are inherently the exclusive powers of the states and their regulatory bodies. Simply stated, we now have during the war federal control of oil and gas. The oil and gas industry and the state oil and gas regulatory bodies are under the rules and regulations of PAW, a federal war agency.

Trend to Centralization

"All students of government and observing citizens are aware that even prior to the advent of World War II there was a marked trend towards centralization of power in our national government and federal control. Our national government has gathered unto itself from many fields of industry and business powers of regulation and control that have been constitutionally considered matters of state regulation, administration and control. As far back as 1935 there were proposals for federal regulation of oil.

"There is justifiable cause for the belief that federal control of oil and gas after the war will be advocated in Washington. Certain officials high in governmental places in Washington are known to favor federal control of oil and gas. Specific governmental proposals have pointed to it. Notable were the proposed Petroleum Reserves Corporation, the proposed government financing of the $300,000,000 Saudi-Arabian pipe line, and the most recent, the proposed Anglo-American oil agreement. Federal control of oil and gas would have been a necessary consequence of legislation adopting and implementing these two first proposals.

"The same is true of the Anglo-American oil agreement now before the United States Senate for adoption as a treaty. In the Anglo-American oil agreement we have an international treaty approach to federal control.

"We can expect other and future governmental proposals that would lead to federal control of oil and gas.

"If the oil industry and the gas industry are to survive as private enterprises, the leaders of these industries should join now with the members of the Inter-State Oil Compact Commission, the state oil regulatory bodies and the people of the oil-producing states in joining in the fight for the termination of federal control after the necessities of wartime coordination end and the establishment of state conservation, regulation and control of oil and gas.

States Must Be Ready

"But if the states are going to regulate and control and be the masters of conservation they must be ready, willing and able to regulate and control the day peace comes and the instant war emergencies go.

"States which have no conservation laws should promptly provide themselves with such conservation laws as will protect their oil and gas reserves and will be sufficient to prevent any intrusion of federal control.

"The oil-producing states by being thoroughly able to regulate oil and gas within their states can give the best reason why no federal control or regulation is needed. The oil-producing states could then be in a position to say that all that was needed from the national government to guide them in their oil production would be the Bureau of Mines' monthly estimate of probable market demand as it was published before the war. This estimate of probable market demand is purely informative. It would be helpful to the oil industry and state oil regulatory bodies just as the weather corecast put out by the weather bureau and the cotton crop estimates issued by the Department of Agriculture are helpful to the citizens who are benefitted by their information."

Texas' Situation

Despite the fact that it is woefully undermanned, and its staff is poorly

paid, the Texas Commission has begun preparations. The first move was to juggle its personnel in an effort to improve the efficiency of its organization. The second is the preparation of a complete program to present to the state legislature when it meets in January.

The Texas oil industry pays a special tax for enforcement, a tax intended to support the Railroad Commission. However, none of the money goes to the commission save that which the legislature appropriates specifically.

Thus, for the fiscal year ending August 31, 1943, total income from this tax was $1,276,208.46, plenty for the maintenance of an excellent organization. Yet the legislature appropriated only $472,032, or about 37 percent of the funds collected.

The rest of the money went to the General Revenue Fund to pay the ordinary running expenses of the state. At the last session, in an economy move, the legislature cut one third of the employes from the commission staff.

The entire cut, however, cannot be blamed on the legislature. Neither the commission nor the oil industry, which was well represented at the capital during the time the session was in progress, showed too much interest in the matter. Every state department usually asks for larger appropriations, if for no other reason than to be sure that it does not get a cut.

No one realized at the time how serious the results would be, especially in the face of rising salaries and manpower shortages. Some commission employes went to war, others found places at higher salaries in government offices or private industry.

Salaries Too Low

Low salaries prevented the commission from replacing these losses with efficient help. Top pay for stenographers is $110 per month. Industry and government "starting" pay is generall $125, to which is added overtime and the prospect of base rates as high as $150 or $165.

The commission's pay scale for junior engineers is $190 per month. This was usually given to engineers just graduating from college prior to the war. The commission sometimes hired from the University of Texas and Texas A. & M. College every graduating petroleum engineer who did not have a job in private industry. The army takes most of these young men now, and the federal government or industry employs the remainder at pay higher than the commission can offer. Places for nine of these men have been open for some time on the Texas Commission.

Senior engineers get better pay, $250 to $300 per month, but these same engineers can get from $350 to $550 working for PAW. Comparable rates of pay can be obtained in private industry, along with the prospect of advancement and retirement benefits if they make the grade.

Inadequate Staff

The staff of the Oil and Gas Division of the Commission at Austin has worked under the most discouraging conditions. The few employes who remain have had to break in new workers frequently, then saw many of the most efficient move on within two or three months to jobs with higher pay.

After a hearing was held, members of the engineering staff have been required, frequently, to write out in long hand their memoranda to the commissioners and the orders themselves. This was necessary because no stenographer was available; the work had to be handled finally by a typist who knew no shorthand. With as many as five hearings daily, which consumed four or five hours for hearing the evidence alone, little time was left for the routine tasks which the small staff must perform.

Prior to the war, Texas produced about 39 percent of the nation's crude. Now it is producing over 42 percent. The number of wells and fields has increased, together with the problems attendant to deeper production, cycling operations and pressure maintenance programs.

These changes have presented many new engineering problems in the field of conservation, but the commission has been forced to handle them with a smaller staff. Only one or two petroleum engineers are on the payroll now, and there is little prospect that others will become available until the end of the war unless the next legislature raises salaries materially.

While the companies continue to file reports on gas-oil ratios, bottom-hole pressures, and the amount of water injected in various fields, this information cannot be assimilated because there are not enough skilled employes to handle the work.

Studying Needs

In order to carry out its conservation program effectively, the commission must evolve a plan which it expects to push during the legislative session beginning in January.

Studies being made by the commission to determine what is a proper staff are not yet complete. However, it appears that there should be at least one senior petroleum engineer in each of the 12 district offices away from Austin. Salaries on these jobs should range from $350 to $400 per month so the commission can compete with industry and the federal government.

At least two senior petroleum engineers should be located in the Austin office, together with five or six junior engineers who could be sent to various parts of the state when trouble develops or when special surveys are required. Minimum salaries of $250 per month for junior engineers are needed to hold good men.

Supervision of petroleum engineers should be under the direction of a chief petroleum engineer who should be paid from $5500 to $6500 per year. He also should have the assistance of a senior statistician and one or two junior statisticians, men whose services command salaries of $400 per month and $250 per month, respectively. Need for expert statistical work has increased steadily, and without service of this kind the best results cannot be obtained.

Deputy supervisors, one to each of the 12 field offices, are now paid $250 per month. Salaries of these men either should be increased or they should be replaced by the petroleum engineers who could handle the work.

Other clerical help, both in the district offices and at Austin, is now inadequately paid. Top price for stenographers, for example, is $110 per month. Since this classification usually furnished the source for all secretarial help, it is readily apparent that few of the best workers are attracted to the job.

Industry Attitude

The attitude of the Texas oil industry toward the commission program should be and is expected to be radically different during this session than it was during the last. Most members of the industry seem convinced of the competency of the commission as now constituted.

The industry has become awakened to the fact that most of the money it pays in as a special tax for a conservation program is being diverted to other sources. It feels this money should be used for the purpose for which it was intended or else the tax should be reduced.

Because industry objects to control by Washington and the tax itself is small, most representatives of oil companies should feel that the wise course is to support the commission before the legislature in its program for greater efficiency.

Early Gas Repressuring For West Edmond Likely

Gas repressuring may be introduced into the West Edmond pool of central Oklahoma shortly after the initial drilling campaign is completed which may be some time next year. Profiting from lessons learned in the past in connection with secondary recovery and unwilling to wait until the pool starts to decline, engineers are studying methods which will utilize and conserve the pool's primary gas expansion cap type energy.

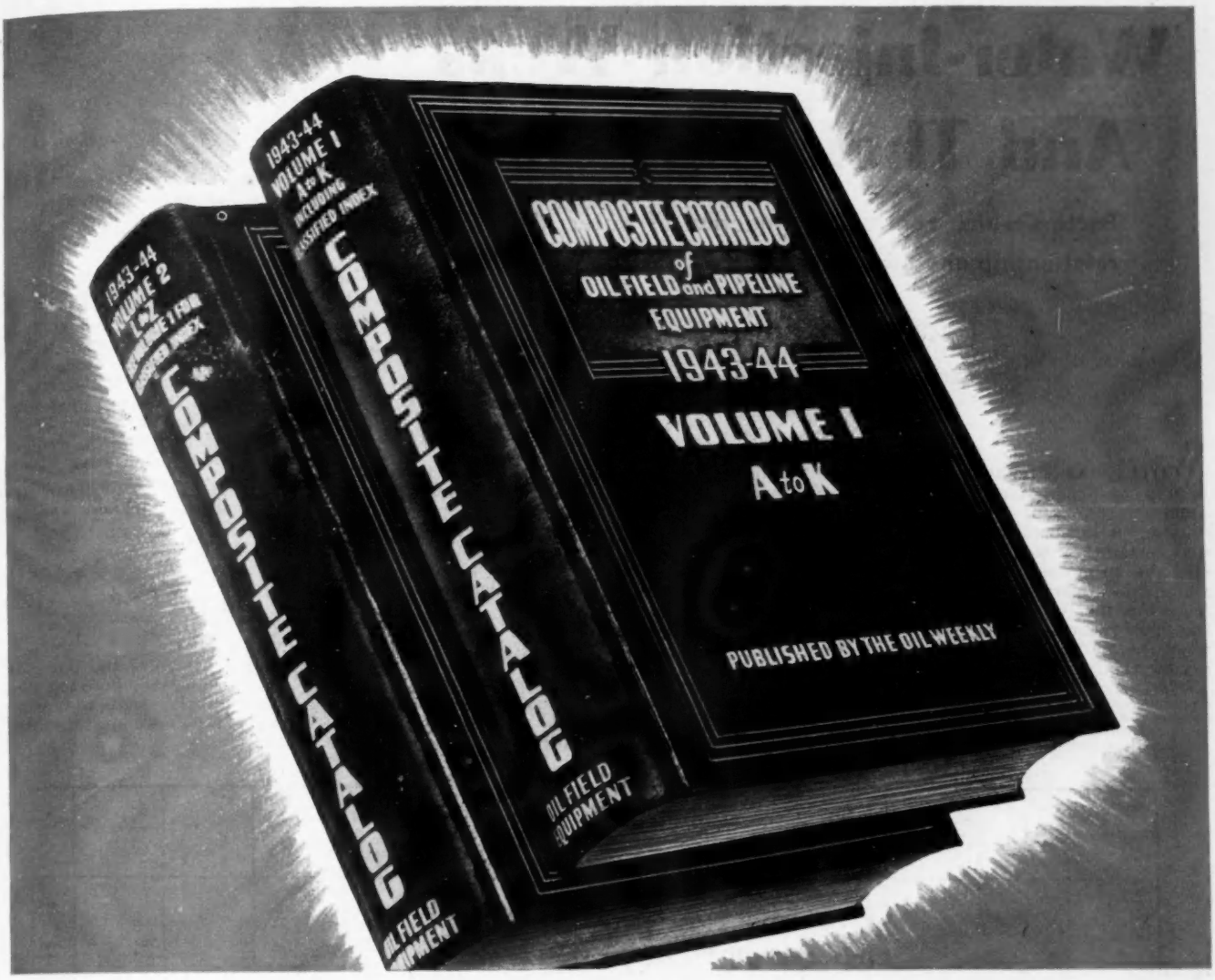
Conferences for using natural gas to repressure the pool have already been held and engineering committees will shortly be appointed to study the problems, it was revealed by an official of Anderson-Prichard Oil Company during recent hearings before the Oklahoma Corporation Commission. He declared it was engineering opinion that several hundred million barrels of additional oil can be recovered by gas repressuring if introduced at the proper time in the producing life of the pool.

Another important project being studied in the West Edmond pool is the utilization of dry or edge wells as salt water disposal wells. The field is producing approximately 20,000 barrels of salt water daily and steps are being taken to prevent contamination of the Oklahoma City water supply which is located not far to the east of the pool limits.

United States Bureau of Mines is undertaking a survey of the West Edmond pool with emphasis on methods to be recommended in a secondary-recovery program.

Kansas Hearing Set

December 22 the Kansas Corporation Commission will hear evidence on crude oil market demands and fix state allowables for January. It will also consider evidence to determine whether regulations for the conservation of crude oil and natural gas should be amended.



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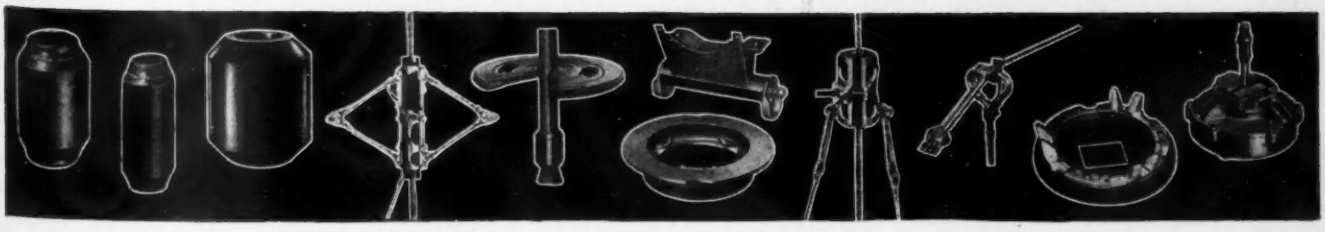


Water-Injection Wells And Their Behavior

Factors which control the injection of water, their relationship and how well behavior can be predicted

By S. T. YUSTER* and J. C. CALHOUN, JR.*
Division of Petroleum and Natural Gas, School of Mineral Industries
Pennsylvania State College

WHILE the ultimate aim of the oil man is the production of oil, in the secondary recovery of petroleum by water flooding it is necessary to inject water into certain key wells in order to stimulate the production. Consequently, the water-flood operator is interested in the behavior of a water injection well, and the laws which govern that behavior. It is the purpose of this discussion to review the factors which control the injection of water, point out their relationship, and where possible, indicate how the well behavior may be predicted. It will be necessary to make certain simplifying assumptions at times in order to analyze the problem mathematically but these will be indicated in the course of the discussion.

* This paper was presented at the eighth technical conference on petroleum production held at the school of mineral industries, Pennsylvania State College, State College, Pennsylvania, on October 27, 28, 1944.

Development of Equations

The fundamental law governing the flow of fluids in the vicous range in a porous medium is given by Darcy's Law. In one form for linear flow of an incompressible fluid it may be given as follows:

$$(1) \qquad Q = \frac{-kA}{\eta}\frac{dp}{dl}$$

Where Q is the flow rate in cubic centimeters per seconds.

A is the cross sectional area of the porous medium in square centimeters.

η is the viscosity of the flowing fluid in centipoise.

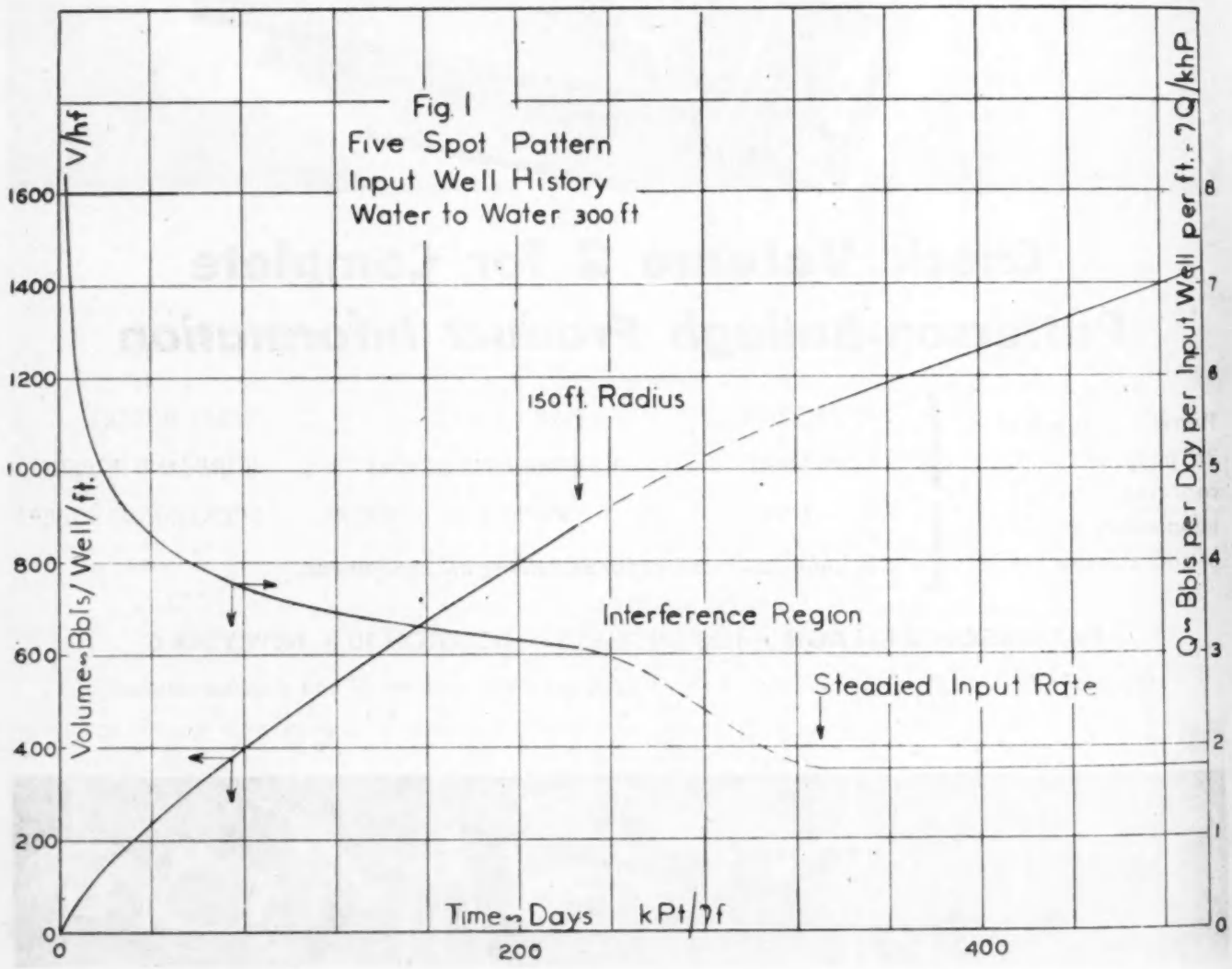
$\frac{dp}{dl}$ is the pressure gradient causing flow in atmosphere per centimeter.

k is a proportionality constant which describes the conductance of the medium and it is the permeability in darcies.

Adapting this equation to radial flow, which is the condition during part of the life of a water injection well, A becomes $2\pi rh$, r is the fluid penetration radius and h the formation thickness and $\frac{dp}{dl}$ becomes $\frac{dp}{dr}$ and

$$(2) \qquad Q = \frac{-2\pi khr}{\eta}\frac{dp}{dr}$$

Separating the variables and integrating the above equation between the limits existing in the well and some position out in the formation at the edge of the fluid bank



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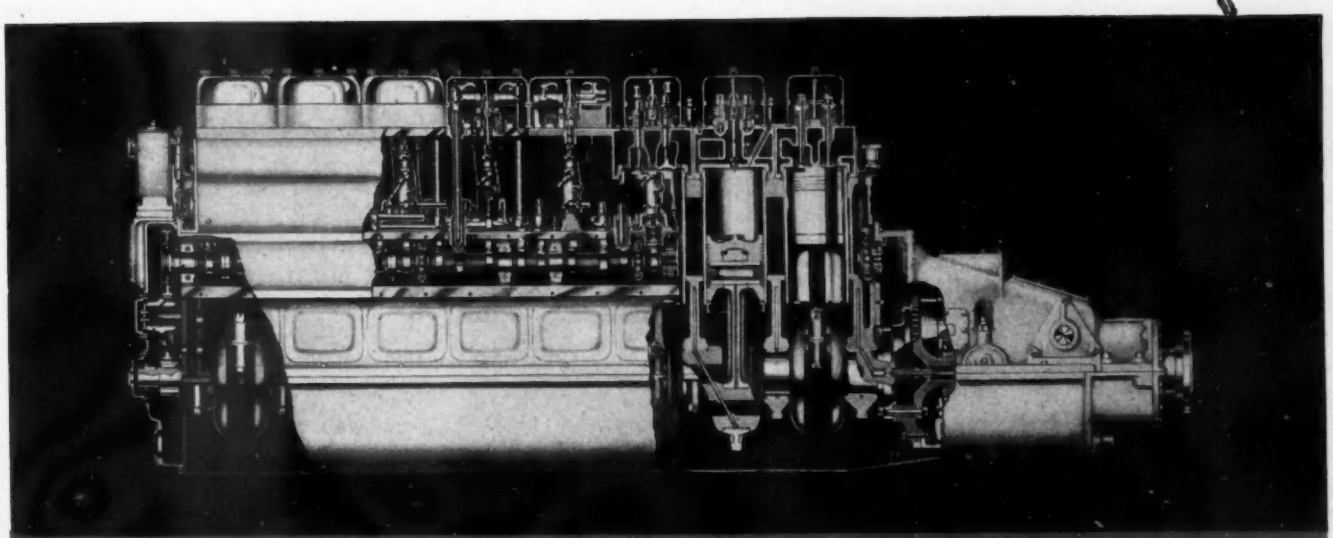

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$$(3)\qquad Q=\frac{2\pi kh}{\eta}\,\frac{(P_i-P_f)}{\ln\frac{R}{r_w}}$$

where P_i and P_f are the injection and formation pressures (at the edge of the fluid bank) respectively and R and r_w represent the radius of the fluid limit and effective well radius respectively. If it is assumed that the formation pressure is zero gauge (this is not too drastic an assumption in a pressure dissipated area) then

$$(3a)\qquad Q=\frac{2\pi khP}{\eta\ln\frac{R}{r_w}}$$

where P is the injection pressure as measured on the sand face.

While k, h, P, η, and r_w may be considered as being constant during the injection of water, R, the limit of the water bank is continually increasing and therefore Q, the water input rate must decrease with time. The rate of decrease will be rapid at first but will slow down with time.

It should be pointed out that the discussion so far has assumed that the water is penetrating the sand and no oil is being pushed out ahead of it. The more exact case is the one in which a bank of oil accumulates ahead of the radially penetrating water. This exact situation can be analyzed mathematically but because of its complexity would be very difficult to apply. Accordingly the simplified case being considered will be used in order to determine the general trends.

Since the relationship given in (3a) between Q and R would be of only slight interest to the oil man, the radius of water penetration, R, will be replaced by the equivalent quantity, the amount of water injected.

$$(4)\qquad V=\pi R^2 h F(1-S_r-w)$$

Where V is the total volume of water injected or the quantity necessary to saturate completely the formation out to R.

h is the sand thickness.

f is the fractional porosity.

S_r is the fractional residual oil saturation after the flood waters have passed.

w is the fractional interstitial water saturation.

From this equation R can be solved for in terms of V, thus

$$(5)\qquad R^2=\frac{V}{\pi hF(1-S_r-w)}$$

Differentiating equation (4) with respect to the time, t, gives

$$(6)\qquad \frac{dV}{dt}=Q=2\pi RhF(1-S_r-w)\frac{dR}{dt}$$

Equating this expression for Q with that in equation (3a) and separating the variables, one obtains

$$(7)\qquad RdR\,(\ln R-\ln r_w)=\frac{kP\,dt}{\eta F(1-S_r-w)}$$

Integrating between the limits r_w and R and simplifying this becomes

$$(8)\qquad \frac{R^2}{2}\ln\frac{R}{r_w}-\frac{(R^2-r_w^2)}{4}=\frac{kPt}{\eta F(1-S_r-w)}$$

$$(9)\qquad R^2\left(\ln\frac{R^2}{r_w^2}-1\right)+r_w^2=\frac{4kPt}{\eta F(1-S_r-w)}$$

Substituting the value of R given in equation (5) in equation (9) and simplifying, the final expression is:

$$(10)\qquad \frac{V}{\pi hF(1-S_r-w)}\left[\ln\frac{V}{\pi r_w^2 hF(1-S_r-w)}-1\right]+r_w^2=\frac{4kPt}{\eta F(1-S_r-w)}$$

This gives V, the total quantity of water injected, or V/h, the quantity of water injected per unit sand thickness, as a function of time. This can be converted to oil man's units, and becomes

$$(10a)\qquad \frac{V}{.561\,hF(1-S_r-w)}\left[\log\frac{V}{.561\,r_w^2hF)1-S_r-w)}-.435\right]+.435r_w^2=\frac{.011\,kPt}{\eta F(1-S_r-w)}$$

Where V is in barrels, h and r_w are in feet, P is in pounds per square inch, k is in millidarcies, t is in days, and the logarithm is to the base 10. By the use of this equation it is possible to calculate the total water injected into the sand as a function of time providing the process is a simple radial encroachment. The best method of accomplishing this would be to substitute various values of V in the equation and solve for t; then use the plot of these data for determining V as a function of t. This relationship holds only for a uniform permeability sand. Its application to a heterogeneous permeability profile will be considered later on in this discussion.

Solving equation (3a) for R, substituting in (9) and simplifying gives

$$(11)\qquad \frac{4kPt}{\eta Fr_w^2(1-S_r-w)}=1+\left(\frac{4\pi khP}{\eta Q}-1\right)\frac{4\pi khP}{\rho\,\eta Q}$$

which is the relationship between the rate of input Q and the time t. Again converting to oil man's units, this becomes:

$$(11a)\qquad \frac{.0253\,kPt}{\eta Fr_w^2(1-S_r-w)}=1+\left(\frac{.0142\,khP}{\eta Q}-1\right)\frac{.00617\,khP}{10\,\eta Q}$$

Where Q is given in barrels per day. Using this equation it is possible to calculate the rate of water input as a function of time if the process is a radial penetration. By substituting various values of Q in equation (11a), t may be obtained. Plotting these values h will give Q as a function of t. Just as in the equation for cumulative volume injected, equation (11a) holds only for a uniform permeability sand.

Application of Equations

In order to examine the relationships given by equations (10a) and (11a) more closely they are plotted in Figures 1, 2, 3, and 4.

The following quantities can be assumed for Pennsylvania conditions:

k = 1 millidarcy
P = 1000 p.s.i. sand face pressure.
η = 1 centipoise
F = .14
r_w = 15 feet
S_r = .25
w = .25
h = 1 foot

The time in days is plotted on the x-axis, the cumulative volume in barrels along the left hand y-axis, and the rate in barrels per day along the right hand y-axis. Since the equations hold for radial encroachment there is a limit beyond which the relationships are no longer valid. The range of radial encroachment is given by a solid line on the graphs. It was assumed that the formation pressure was zero gauge so that all of the pressure drop is through the encroaching liquid flowing in the sand. Non-radial penetration of the liquid would begin when the radially encroaching liquid from the various injection wells became tangent to one another. It would be at this point that the interference between injection wells would first be felt and a given injection well would begin to realize that there were other injection wells on the property. The elapsed time before well interference sets in is dependent upon the spacing but up to such a point the rate of injection for a given elapsed time will be independent of spacing. This is shown by the duplication of the injection curves for different patterns and spacings up to the point of interference.

TABLE 1

Comparison of Conditions in Various Patterns

(Standard is 300 ft. 5-spot. Constant well density)

PATTERN	Spacing W-W	Spacing W-O	Area per Element	Relative No. Element Areas	Input Wells per Acre	Relative Input Wells	Prod. Wells per Acre	Relative Prod. Wells	Relative Steady Rate	Relative Flood-out Time
5-spot	300 ft.	212 ft.	2.07 acres	1.00	0.483	1.000	0.483	1.000	1.00	1.00
4-spot	395 ft.	228 ft.	1.55 acres	0.75	0.323	0.669	0.645	1.338	0.838	1.54
7-spot	228 ft.	228 ft.	3.10 acres	1.50	0.645	1.338	0.323	0.669	0.838	0.778
Staggered Line Drive	173x520	274 ft.	2.07 acres	1.00	0.483	1.000	0.483	1.000	0.685	1.16

The fraction of the area flooded before well interference sets in is dependent upon the pattern. It is 90.8, 78.6, 60.5, and 26.2 percent respectively for the 4-spot, 5-spot, 7-spot, and a staggered line drive whose element area is three times as long as it is wide. This is shown diagrammatically in Figure 5. It can be seen that the 4-spot gives the maximum possible penetration before well interference sets in since the arrangement gives the closest packing of circles in a plane.

In order to compare the behavior of an area when developed by the different patterns, the spacings were so adjusted as to give the same well density per unit area. A 300-foot 5-spot (distance between water wells) was chosen as the standard. The accompanying Table 1

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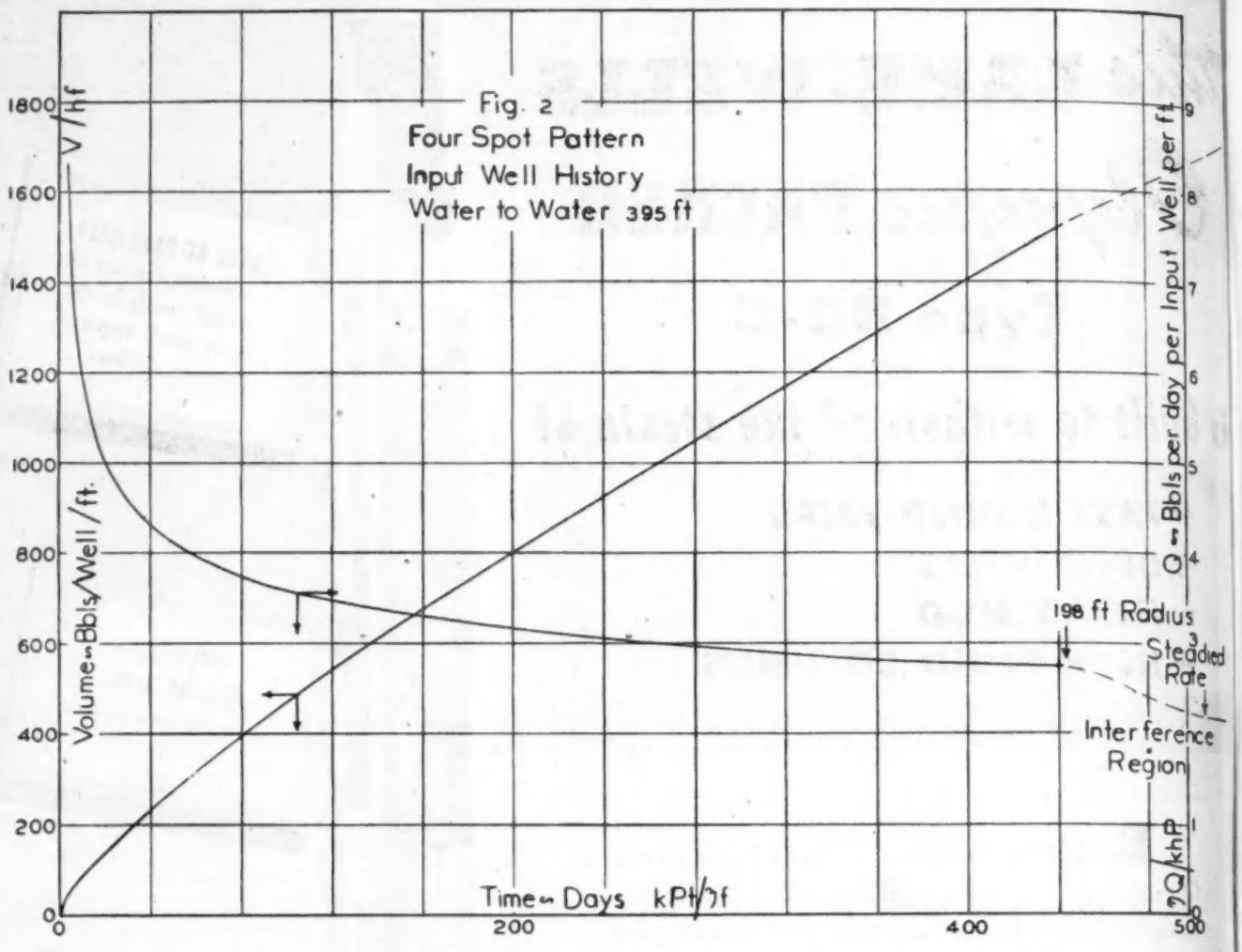

summarizes the conditions involved in the different patterns.

The column headed "Relative Steady Rate" is based on the saturated conductivity equation given by Muskat in his book on the "Flow of Homogeneous Fluids." The equations modified for oil man's units are as follows:

For the 5-spot (for one input or producer)

$$(12) \qquad Q_5 = \frac{0.00154\,khP}{\eta(\log_{10}\frac{W}{r_w} - 0.420)}$$

For the 4-spot (for one input or two producers)

$$(13) \qquad Q_4 = \frac{0.00205\,khP}{\eta(\log_{10}\frac{W}{r_w} - 0.487)}$$

For the 7-spot (for two inputs or one producer)

$$(14) \qquad Q_7 = \frac{0.00205\,khP}{\eta(\log_{10}\frac{W}{r_w} - 0.248)}$$

For the staggered line drive (for one input or producer)

$$(15) \quad Q_s = \frac{0.00308\,khP}{\eta\log_{10}\frac{\cosh^4 \pi C/2 \cosh^2 3\pi C/2}{\sinh^2 \pi r_w/W_1 \sinh^4 \pi C \sinh 2\pi C}}$$

Where W_1 and W_2 are the shortest and longest water to water distance respectively in an element area of the staggered line drive and

$$(16) \qquad C = W_2/W_1$$

A fair approximation of equation (15) which is simpler to use is

$$(17) \quad Q_s = \frac{0.00154\,khP}{\eta(\log_{10}\frac{W_1}{r_w} + 0.342C - 0.798)}$$

About the maximum possible error in the use of the above equation occurs when C is one, which is the case for the special staggered line drive, the 5-spot. Under the conditions assumed here, the error will be about 4 percent which is probably sufficiently accurate for field use. As the spacing is decreased or the wells are shot heavier to increase their effective radius, the error will increase. Conversely, the wider the spacing and the lighter the shooting, the less the error involved. The larger the value of C, the more exact the results with equation (17). In general equation (17) should be good enough for the majority of field calculations.

The quantities in the equations just listed are in oil man's units with Q in barrels per day, k in millidarcies, h in feet, P in pounds per square inch, η in centipoises, W the water to water well distance, in feet, and r_w in feet.

The patterns as defined here are determined by the shape of the element areas as outlined by the input wells. In the seven spot, the input wells are arranged to give an array of hexagons with one producing well in the center of the six inputs. In the four spot, the input wells are arranged to give an array of equilateral triangles with one producing well in the center of three inputs. The four spot is a reversed seven spot and from this standpoint the steadied conductivity should be the same for the two patterns. It should be noted that equation (13) gives the flow into on input or the flow out of two producers. Equation (14) gives the flow into two inputs or the flow out of one producer.

Since equations are available for the radial encroachment and the steady flow rate, it should be possible to interpolate between these regions and obtain a fairly complete picture of the behavior of the area. This has been done in Figures 1, 2, 3, and 4, the dotted portion of the curves indicating the interpolated region.

Since these curves may find application in the field it would be in order to describe the method of drawing them. The method of obtaining the curves in the region of radial encroachment has been described previously. The maximum distance of radial encroachment is one half the distance between input wells. In the case of the staggered line drive, it is one half the distance between the closest inputs. The cumulative volume of water per foot which must be injected to reach this condition would be

$$(18) \quad V_r = 0.1783\,\pi\frac{W^2}{2}F(1-S_r-w)$$

$$= 0.140\,W^2F(1-S_r-w)$$

where V_r is the cumulative volume in-

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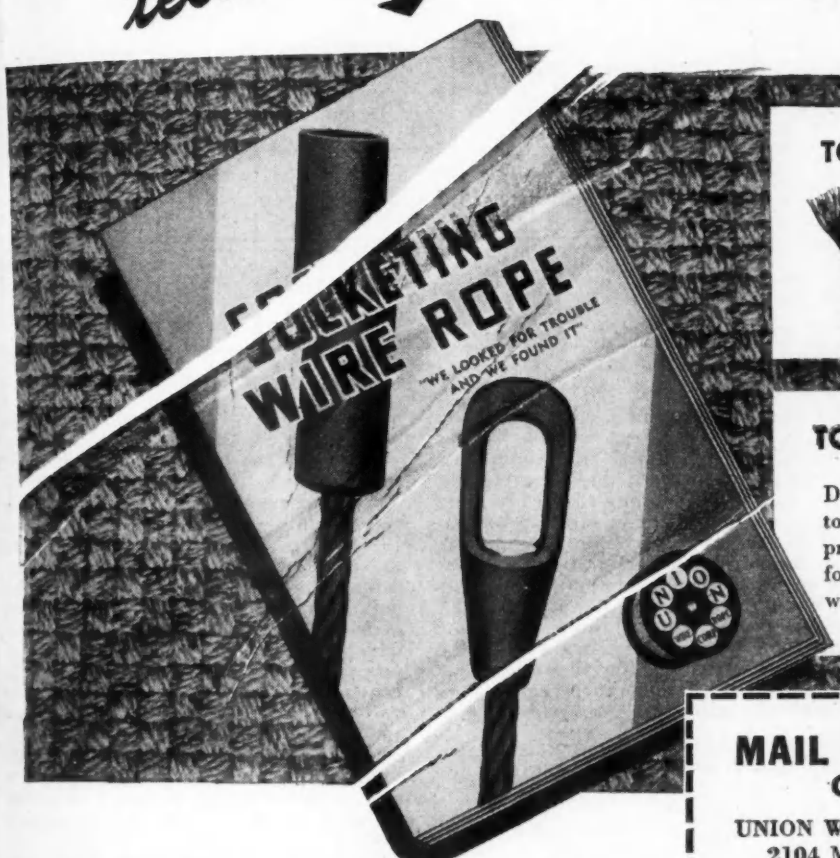

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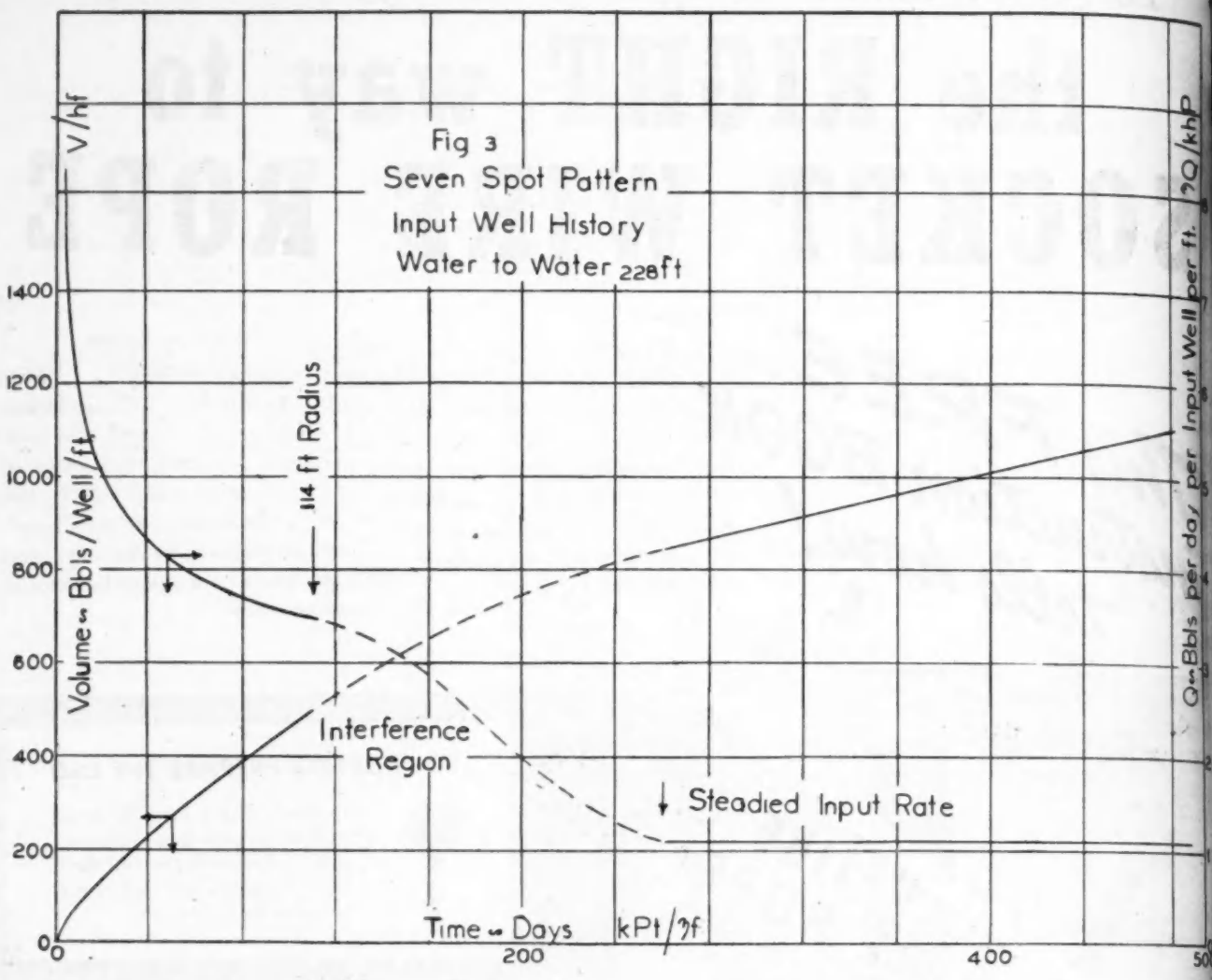

put for maximum radial encroachment.

The volume versus time curves and the rate versus time curves beyond the time indicated by the above volume would be in the interference region and they are dotted accordingly.

In order to obtain the time necessary to reach the steadied input rate, use was made of the cumulative volume of water which would be injected per well to completely fill the element area. These cumulative volumes are as follows:

For the 5-spot
(19) $V_{ef} = 0.1783\ W^2\ F(1-S_r-w)$

For the 4-spot
(20) $V_{ef} = 0.1543\ W^2\ F(1-S_r-w)$

For the 7-spot
(21) $V_{ef} = 0.231\ W^2\ F(1-S_r-w)$

For the staggered line drive
(22) $V_{ef} = 0.1783\ W_1W_2\ F(1-S_r-w)$
where the subscript "f" indicates the fill-up volume.

One possible method of obtaining the time for complete fill-up would be to extrapolate the volume versus time curve for radial encroachment to the volume given by one of the above equations for fill-up and read the time corresponding to this value. While this might give a fair approximation of the time in certain cases, it would introduce a large error in cases where the well interference region is considerable. Such a method does not consider the rapid reduction in input rate as the advancing flood approaches the second bottleneck of the pattern; namely, the producing well.

If it is assumed that the input rate between the limit of radial encroachment and the beginning of steady state flow is a straight line, a fair approximation of the input curve may be drawn. The method depends on the fact that the area under the rate curve represents the cumulative volume of water injected over the time interval involved. Since both the injection rate and cumulative volume are known for the beginning and end of the interference region, it is possible to calculate the time, as follows:

(23) $V_t - V_r = \frac{Q_t + Q_r}{2}(t - t_r)$, or

(23a) $t = \frac{2(V_t - V_r)}{Q_t + Q_r} + t_r$

$V_t - V_r$ is the volume of water to be injected during the interference range, $\frac{Q_t - Q_r}{2}$ is the linear average rate of injection over the period $(t - t_r)$. t_r is the maximum time for radial encroachment and t is time to steady state flow which is the time required. Equation (23a) simply states that a volume divided by an average rate gives a time. The time given by equation (23a) and the steady input rate give a point on the rate curve. A straight line is drawn between this point and the rate at the end of radial encroachment. A gradual reverse curve is drawn about this straight line as a base in order to smooth out the over-all curve. The areas above and below the straight line should be balanced. Beyond t, the rate of flow is constant and this is shown by a solid line.

The time given by equation 23a and the fill-up volumes given by equations 19, 20, 21, and 22 will give a point on the cumulative volume curve. Since the rate of input is a constant beyond this point, the cumulative volume curve should be a straight line, the slope of which is equal to the steadied input rate. The interference region should be drawn in to give a smooth curve. The two curves may be checked against one another by comparing the slope of the cumulative volume curve with the absolute values on the rate curve or the areas under the rate curve compared with the absolute values on the volume curve.

These curves give directly the relationship between the variables time, rate, and cumulative volume for the conditions given previously. However, they may be used along with some very simple calculations to give the behavior under other conditions. An examination of equations 10a and 11a will indicate how this may be accomplished.

Let $F(1-S_r-w) = f$, or the fractional fill-up volume. Then according to equation 10a, it is possible to plot V/hf as a function of $kPt/\eta f$. The cumulative volume, V, may be found as a function of t with h, f, η, k and P varying. If the graph has been plotted for unit permeability, multiplying the time by the actual permeability and using this pro-

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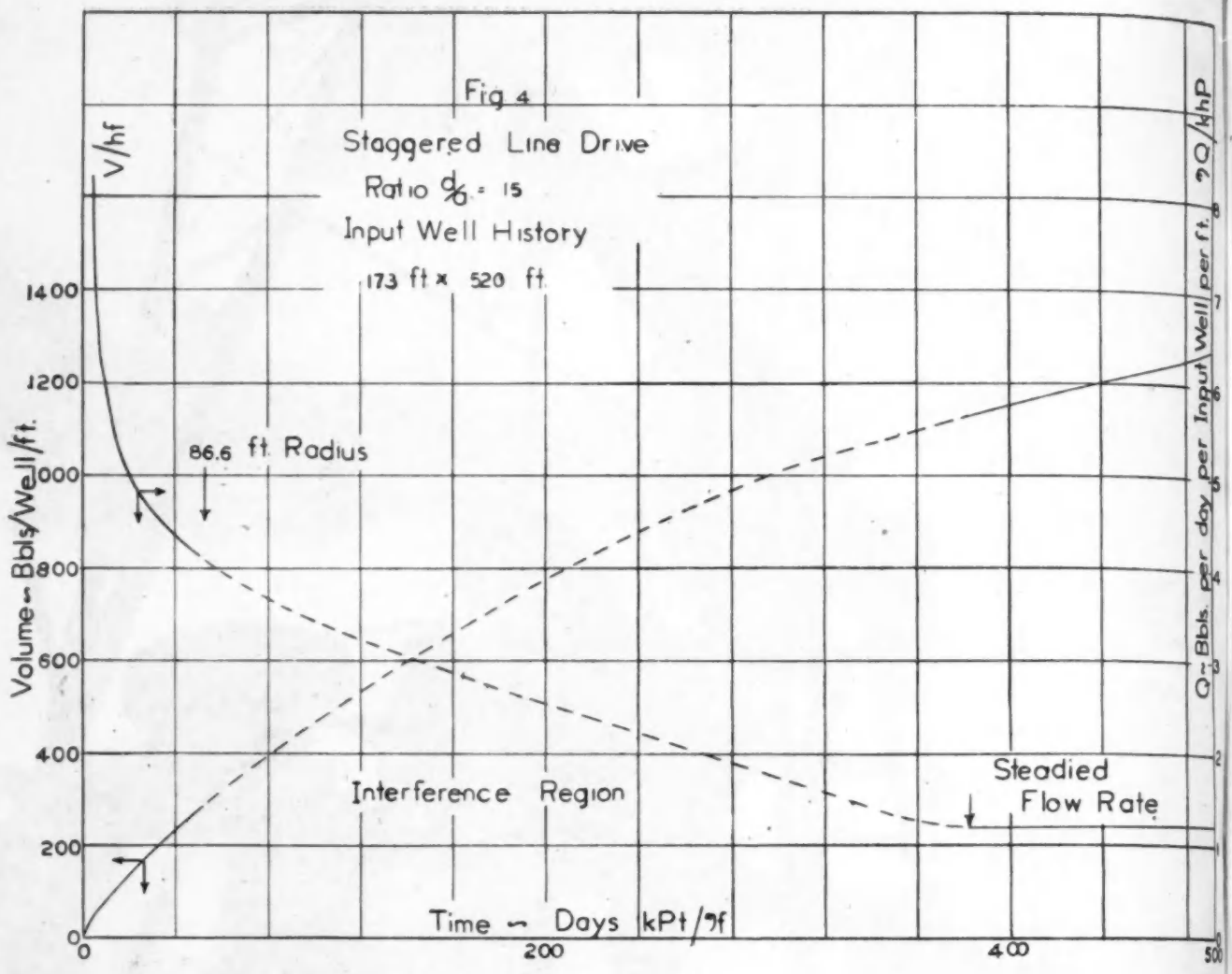

uct on the time axis will give the cumulative volume desired.

For most developments the pressure and the viscosity of the injected fluid are constant. Then it may be considered that V/hf is plotted against kt/f. If $Y = V/hf$ and $X = kt/f$, the plot is really X vs. Y. An example will serve to illustrate the method of applying the graph. Figure 1, for the five-spot development will be used. The curve was drawn for a permeability of 1 millidarcy, a flooding pressure of 1000 pounds per square inch, a liquid having a viscosity of 1 centipoise, a thickness of 1 foot, and a fractional fill-up volume of 0.07. All conditions other than k, h, and f will remain constant. It is necessary to find the volume of water which a 5-foot section of a 2-millidarcy effective permeability sand will take in the first 40 days if the fractional fill-up volume is 0.1. Since the value of f which was used in the plot was 0.07, $X = .07$ kt/f and $Y = .07V/hf$. If the values given above are substituted in this equation for X, then X would be $0.07 \times 2 \times 40/0.1 = 56$. The corresponding value of Y on Figure 1 is 300. Putting this quantity in the equation for Y, then $300 = 0.07V/5 \times 0.1$ and $V = 2150$ barrels.

If f in the example chosen had been the same as the value used in plotting (0.07) then the solution to the above problem would be relatively simple. Multiplying the time by the permeability gives 80. This corresponds to 400 on the volume axis. Multiplying 400 by the sand thickness, gives 2000 or the total

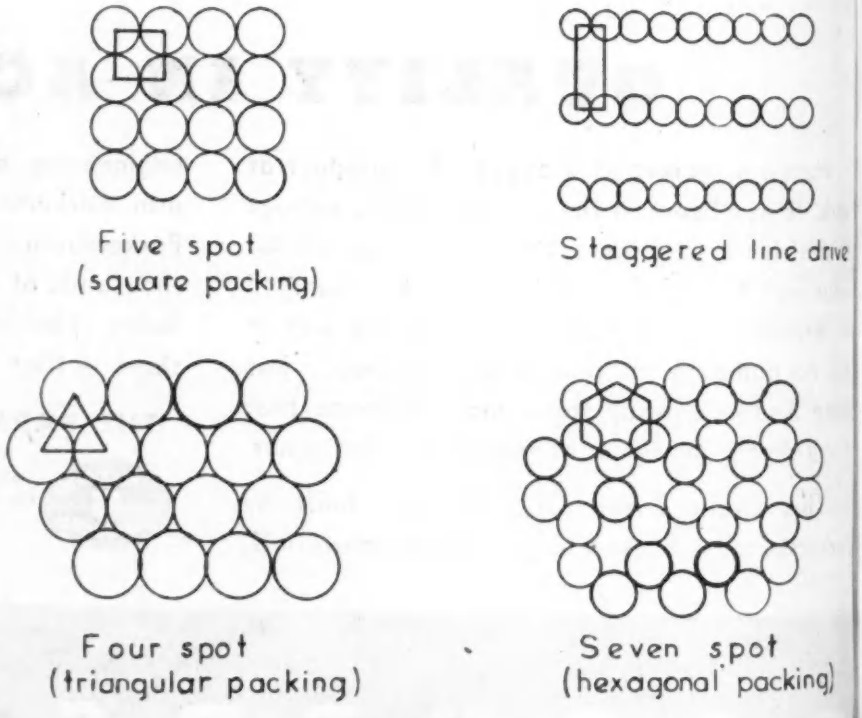

FIGURE 5
Limit of radial encroachment in various patterns

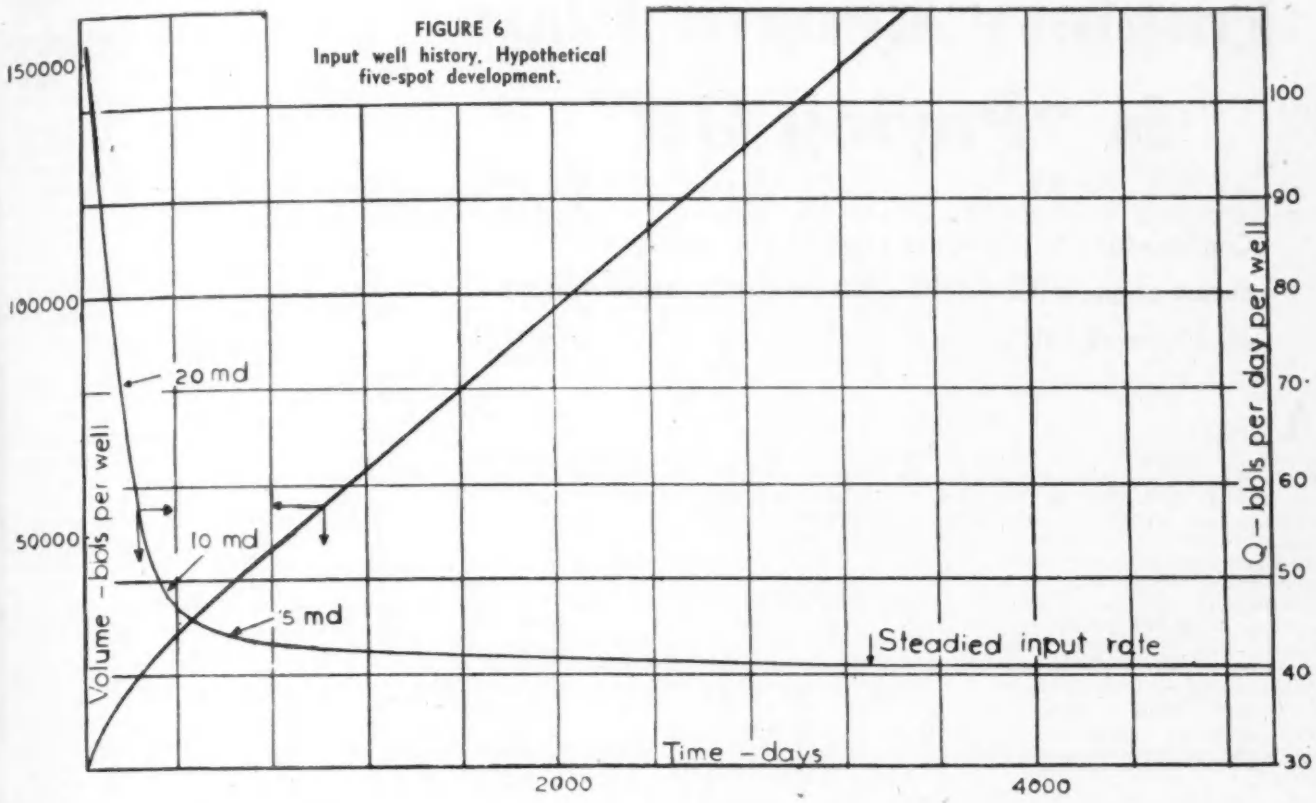

FIGURE 6
Input well history. Hypothetical five-spot development.

volume of water injected. If the time necessary to inject a given volume of water is needed, the above process is reversed.

For the case of rate of injection as a function of time, equation 11a is used. Again $X = 0.07\ kt/f$ and Z (the right hand y-axis) $= Q/kh$. Referring to the previous problem $X = 56$. The corresponding value of Z on Figure 1 is 4 barrels per day per foot of sand. Substituting this along with the values for k and h in the equation for Z just given and $Q = 40$ barrels per day into the 5-foot section at the end of 40 days. If f were the same in this problem as the value used in plotting, the quantity kt or 80 would be read on the time axis. The Q indicated is 3.75. Multiplying by kh gives 37.5 barrels per day.

It should be pointed out that the method which is used for correcting for a changing f holds only in the radial encroachment region. In the steady state region it is not necessary to correct for f. While not exact, it will be assumed that the same method can be used to correct for f in the interference region as in the radial encroachment region.

The time limit beyond which f is to be disregarded in the calculations can be obtained from the graph. Referring to Figure 1 as an example, it can be seen that beyond an X value of 330, steady state conditions prevail. Then $.07\ kPt/f = 330$ and $t = 330\ f/.07\ kP$. For a 3-millidarcy sand section having a fractional fill-up volume of .07 and a flooding pressure of 1000 pounds per square inch, steady state conditions begin at 110 days. If the pressure had been 2000 pounds per square inch instead of 1000 the time would have been cut in half or 55 days. It should be kept in mind that in all these calculations the pressure is given in thousands of pounds.

The examples just given illustrate the method which would be used to obtain the water input curves on a sand having a heterogeneous profile. The following hypothetical sand will be flooded:

Permeability of Sand	Net Sand Thickness
1 md.	10 ft.
5	5
10	10
20	5

The flooding conditions are as follows:

Five-spot development.

300 feet water to water distance.

15 feet effective radius of shot wells.

1000 pounds per square inch effective flooding pressure.

1 centipoise viscosity of water at formation temperature.

14 percent average porosity of sand.

25 percent average connate water saturation.

25 percent average residual oil saturation after flood.

0.1 relative permeability of all sands to the water flood.

The conditions have been so chosen as to minimize the number of calculations. The only factors which must be considered in obtaining the relationship between Q, V, and t are k and h. Table 2 is a convenient arrangement for the data. The Q's and V's for the various strata were calculated for the chosen times indicated. The summation of these data on the different days was plotted in Figure 6.

It will be noted that the hump given by the interference region on the rate curve for a single permeability stratum is not shown here. This is due to the fact that the overlapping in performance of several permeability strata in parallel may mask any such effect. For the conditions involved, the water input rate drops fairly rapidly and then levels off. The flood-out times for the various permeability strata are indicated on the rate curve.

Editor's Note—This article will be concluded in an early issue.

TABLE 2
Input Rate and Volume Calculations on a Hypothetical Five-Spot

Sand \ Time		30 Days		50 Days		100 Days		200 Days		300 Days		600 Days		900 Days		2000 Days		3000 Days		4000 Days	
k	h	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
1 md	10 ft.	8.2	300	7.0	500	5.8	850	5.0	1400	4.6	1900	4.0	3200	3.7	4300	3.2	8000	2.1	10700	1.8*	12500*
5 md	5 ft.	13.3	575	11.9	875	10.3	1400	8.9	2350	8.3	3200	5.2	5350	4.4*	6700	4.4	11540	4.4	15940	4.4	20380
10 md	10 ft.	45.5	1900	41.0	2800	35.5	4700	31.5	8000	20.5	10700	17.5*	16000	17.5	21250	17.5	40500	17.5	58000	17.5	75500
20 md	5 ft.	39.6	1600	35.2	2350	31.6	4000	17.5*	6250	17.5	8010	17.5	13290	17.5	18570	17.5	37820	17.5	55320	17.5	72820
	Total..	106.6	4375	95.1	6525	83.2	10950	62.9	18000	50.9	23810	44.2	37840	43.1	50820	42.6	97860	41.5	139960	41.2	181200

*Steady State Flow in Stratum.

Employe Benefit Plan Is "Paying Off"

Continental Oil Company's welfare program costs in excess of one million dollars but dividends return in form of improved attendance and efficiency of workers

A MILLION dollars is a fair-sized chunk of money in anybody's pocketbook. When it goes out of a pocketbook for benefits that stick in the minds of employes as "definitely something," it looks like money well spent. Continental Oil Company's employe welfare program costs that company more than a million dollars, but Continental employes are alert to what the benefits mean. "You know," said one of the new employes recently, while discussing the program, "when I started with Continental, I felt that I was getting more than just a job. The company really provides a fine setup and the benefits it offers are something!"

As explained in the November issue of *The Red Triangle*, Continental Oil Company publication, the idea behind the program is to provide a measure of security for the employe. The company was not prompted by altruistic motives in setting up the plan. On the contrary, the benefits grew out of the belief within the company management that "employes who are happy and free from worry about accidents, health, and old-age security are capable of better attendance and more efficient work."

The plan provides four basic insurance benefits: Group life, health and non-occupational accident, permanent and total disability, and group retirement annuity.

Effective Dates

Each employe of the company is provided with a little green book titled "Employe Benefit Plans," which gives all details of participation in the insurance. Employment for a full year is required for eligibility to group life insurance and group retirement annuity. All other benefits except the annual vacation, apply after completion of 90 days on the company payroll.

The new employe could have been cited interesting examples of how the benefits have helped in actual cases. For instance, "Mr. B., a refinery worker died a few years ago and left as close survivors, two children. His wife had died several years before. Through the company insurance plan. Mr. B. had accumulated $5000 worth of insurance. Twenty-five hundred dollars of it had cost him nothing because it came through the free group life insurance plan."

Each permanent employe, after completing one year of service with the company, is given a $1000 policy which is automatically increased $250 annually until a maximum of $2500 is reached. Employes receiving salaries of $6000 or more get only the $1000 policy with no yearly increase.

Additional insurance at rates considerably below that applying to individuals can be bought by persons eligible for free group life insurance. "Mr. B. had purchased $2500 additional insurance under this plan."

"As a result of Mr. B.'s active participation in the company insurance program, his children were able to continue normal lives and to avoid hardships which they might otherwise have experienced. Mr. B's. son, of legal age at the time of his father's death, received his half of the $5000 in one lump sum. The daughter of grade school age was awarded monthly payments of $25 until she finished school. Now, she is attending college and is helped by the insurance payments which have been increased to $50 a month."

$4500, Average Policy

Benefits have to be paid out within 20 years after an insured employe's death. Requests may be made for payments in any form desired, such as lump sums annually, semi-annually, or monthly.

Forty-five hundred dollars is the average insurance policy carried by Continental employes under the group insurance plan. Many advantages have accrued to beneficieries of deceased workers, "Widows have been able to maintain homes for their children . . . insurance payments have helped pave the way to college educations . . . have assisted aged parents who formerly depended on a son or daughter now deceased . . . have aided in the purchase of homes."

Without any cost to themselves, permanent employes receive payments for loss of time due to sickness or non-occupational accidents, under the health and non-occupational accident benefit plan. "For example, Joe Doe is ill . . . must remain off the job for an indefinite period. During the first month of his absence he receives his usual earnings provided payment has been recommended by the chief surgeon and approved by the head of Doe's department. He will receive the same compensation the second month upon recommendations of the chief surgeon and department head and the approval of the company operating committee.

52-Week Maximum

"If Doe is still unable to return to work after two months, he is placed on the health and non-occupational accident payroll and receives weekly benefits. The amount depends on the yearly earnings of Doe. Payments may continue until he is able to return to work or for a maximum period of 52 weeks.

"If an employe, through sickness or non-occupational accident, is permanently disabled for work, he may become eligible for the permanent and total disability benefit plan. Persons on this plan are paid in installments, an amount determined by the operating committee. Maximum allotment is $2000."

Plant and field workers benefit from a new plan of occupational lost-time insurance started by the company in August, 1943. Prior to that time, workmen injured on the job were paid for lost time only under the terms of workmen's compensation laws of the state where injuries were suffered. The new lost-time program provides a maximum payment of "two months' salary or wage, less the amount of the weekly workmen's compensation received during the first two months of disability. Such salary or wage payments are calculated on the employe's regular job at his regular straight-time rate and usual schedule of hours. At the end of two months if the employe is still unable to work, no further wage or salary payments are made under the lost-time plan. However, the employe continues to receive whatever weekly compensation payments may be allowed him under the workmen's compensation laws of the state in which he was injured."

Retirement Annuity

A nest egg for the emlpoye's future is provided by the retirement annuity plan. Both the company and the employe contribute to the retirement fund. "The purpose of the group annuity is not to draw interest for the employe, but rather to build a savings for him as a safeguard in old age. Since the plan was adopted in 1939, 92 employes have become eligible for retirement pay."

Penn Grade Position Is Given to Charles Stout

Pennsylvania Grade Crude Oil Association has announced appointment of Charles E. Stout, of Charleston, West Virginia, as production research engineer in the Southwestern Pennsylvaia, Southeastern Ohio, and West Virginia districts. He will be stationed at Parkersburg, West Virginia, and will devote his full time to the production problems of the lower districts of the Penn Grade region.

Employed for the past 14 years by various subsidiaries of Columbia Gas and Electric Corporation, Stout was graduated from the University of Pittsburgh in June, 1929 with a bachelor of science degree in petroleum geology.

Stout is a member of the Appalachian Geological Society and a registered professional engineer.

Oklahoma Oil Industry Payroll Is $90,000,000

Oklahomans in the oil industry receive approximately $90,000,000 annually in salaries and wages.

This is about twice the value of the state's annual wheat yield, which is 30 to 50,000,000 dollars a year, according to Clarel B. Mapes, secretary-treasurer of the Mid-Continent Oil & Gas Association, Tulsa. Mapes revealed that oil, natural gas and natural gasoline annually produced in Oklahoma is valued at $200,000,000.

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That's TEXAS PRE-FAB's solution to oil industry housing problems. Housing when needed most urgently—*not* after it's too late. That's why you'll find hundreds of TEXAS PRE-FAB's serving the oil industry both here and abroad.

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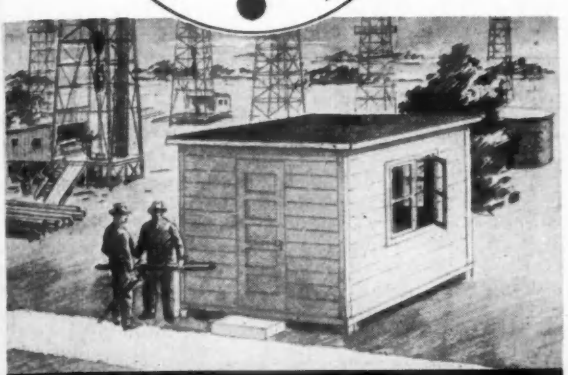

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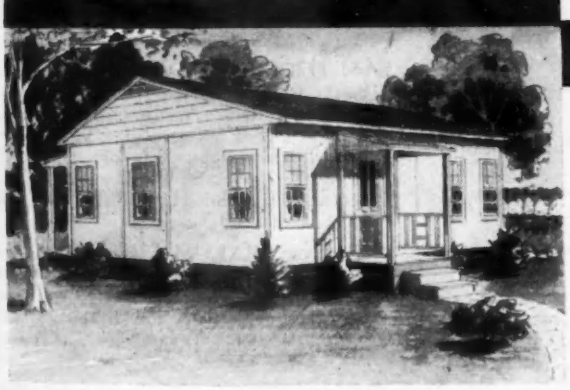

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Tax Review

A New Feature of THE OIL WEEKLY

By WILLIAM O. TAYLOR*

This column will review legislation, judicial decisions, administrative rulings and policies, and topics which are of current interest to the oil industry from a tax viewpoint. It will be published as frequently as new developments seem to require. Two previous columns have appeared in THE OIL WEEKLY (November 20 and 27, 1944).—*Editor.*

Supreme Court Will Decide Proper Treatment of Equipment Cost When Producing Lease Is Assigned

THE Supreme Court has agreed to review the decision of the Tenth Circuit Court in *Choate v. Commissioner*, 141 F. (2d) 641. Ordinarily, this would be no indication of whether the lower court's decision will be affirmed or reversed, but there seems good reason to predict in this instance that it will be reversed. On the same day, the Court declined to review the Fifth Circuit Court's decision in *Hogan v. Commissioner*, 141 F. (2d) 92. Each of the two cases involved the same transaction by a partnership of which Choate and Hogan were members. The cases were consolidated for hearing before the tax court but were appealed to different Circuit Courts, which arrived at different conclusions. Since the applicable rule of law can hardly be different in the two cases and since, by its refusal to review the Hogan case, the Supreme Court has allowed that decision to stand, it is likely that the Choate case will be reversed.

The cases involve an instance in which a producing lease (depleted cost, $23,583.78) and equipment (depreciated cost, $23,090.60) were sold for $110,000 cash, the sellers retaining an overriding royalty. The gist of the Tenth Circuit's decision in the Choate case is that, due to the retention of the over-ride, the transaction was not a sale, that the $110,000 was ordinary income (not proceeds of sale of either the lease or equipment) subject to a depletion allowance, and that the combined remaining cost of the lease and equipment, $46,674.38, must be recovered by the taxpayers through depletion allowances against the cash received and future income from the royalty interest. The Fifth Circuit, in the Hogan case, held that the transaction was a sale insofar as the equipment was concerned and that the depreciated cost of the equipment should be deducted from the $110,000 cash received. This amounts to saying that the equipment was sold for a sum of exactly equal to its depreciated cost, with the result that there was neither gain nor loss on the sale. The rest of the cash received, $86,909.40, was ordinary income subject to a depletion allowance, according to the court's ruling. The decision in the Hogan case is ordinarily more favorable to taxpayers.

Overruling Noted

The Hogan case overrules that part of *G.C.M. 23623*, a government ruling issued in 1943, in which it was inferred that retention of an override in assigning a producing lease would result in the assignment not being treated as a sale, for tax purposes, even of the equipment. At least, it does so in instances where there is a cash consideration equal to or greater than the depreciated cost of the equipment.

G.C.M. 23623 also states that if the cash consideration is less than the depreciated cost of the equipment, the difference may not be deducted as loss on sale of the equipment but must be treated as cose of the override retained. Logical and legal difficulties are encountered in attempting either to sustain or to refute this position. Under ideal conditions, e.g., where it can be shown that the parties actually bargained as to the fair value of the equipment and reached an agreement reasonably related to the particular facts involved, it is believed that the assignor is entitled to deduct the loss where the cash consideration is at least as great as the value of the equipment which they agreed on but is less than the depreciated cost of the equipment. In an instance where the assignor retains an override but receives *no cash* for the assignment, it seems extremely doubtful that the assignor may deduct the depreciated value of the equipment. Among the possibilities which suggest themselves in such a case is that the proceeds from the retained interest represent recovery of the depreciated cost of the equipment transferred, rather than depletable income, until such cost has been fully recovered.

* * *

New Bill Would Change Effect of Percentage Depletion on Operating Losses Carried Forward and Backward

H.R. 5412, a measure recently introduced in Congress by Representative Disney of Oklahoma, would amend Section 122 of the code insofar as it relates to percentage depletion. That section permits a net loss to be carried either forward or backward two years and treated as a deduction in the year or years to which it is thus carried. However, percentage depletion may not be taken into account in computing the net loss which is to be carried forward or backward; and the amount of percentage depletion allowable in a year to which a net loss is carried must be deducted from the amount of such loss.

For instance, X company had a loss of $30,000 in 1943. Its deductions included a depletion allowance of $18,000, of which $6000 is attributable to depletion on cost of leases and $12,000 is percentage depletion. The $12,000 may not be taken into account in computing the net loss to be carried forward or backward, so for that purpose the net loss is $18,000. In 1944, X company has a profit of $14,000 after deducting a depletion allowance of $26,000, of which $8000 is attributable to depletion on lease cost and $18,000 is percentage depletion. The $18,000 loss brought forward to 1944 from 1943 must be reduced by the percentage depletion otherwise allowable in 1944. As a result, there is no loss from 1943 deductible in 1944.

Under *H.R. 5412*, X company's entire net loss of $30,000 in 1943 would be carried forward into 1944. It would entirely offset the $14,000 profit in that year, and $16,000 would be available to offset any profit X company may have in 1945.

If percentage depletion is justifiable at all, there seems to be no good reason why its effect should be limited as is now the case under Section 122. Those who are familiar with the hazards to which the oil industry is subject know how entirely justifiable the depletion allowance is. Its long standing and the overwhelming defeats of attempts to change or abolish it also bear witness.

H.R. 5412 is retroactive to 1940 in the case of losses carried forward and to 1942 in the case of losses carried back.

☆ ☆ ☆

Secondary Recovery in Oklahoma Most Successful

Approximately 40,000 barrels of oil are being produced daily in Oklahoma through secondary recovery methods, a figure in excess of 10 percent of the state's total daily crude oil runs, Raymond M. Carr, production engineer, Sinclair Prairie Oil Company, told the December 4 meeting of the Engineers Club of Tulsa.

Carr quoted PAW estimates that 500 million barrels of oil can still be recovered from old fields in Oklahoma and that the state has produced more than 60 million barrels through secondary recovery since 1932 when eastern capital started a far-reaching development in the northeastern part of the state in the Nowata-Delaware area.

The "secondary oil crop" is netting operators about 20 million dollars a year while practically all secondary recovery projects are benefiting from the stripper well subsidy payments which is putting $15,000 a day into the pockets of operators.

Carr disclosed that so far only waterflood and gas or air injection methods are being utilized in producing secondary recovery oil in Oklahoma. In old areas where primary energy was other than that of expanding gas caps, secondary recovery methods are producing more oil than that produced by primary energy. In some pools where primary methods recovered 4500 barrels to the acre, secondary recovery methods are recovering as high as 6000 barrels and in exceptional cases, 10,000 barrels of oil per acre.

Carr disclosed that North Burbank and Glenn pools are among the most successful secondary recovery projects in the state utilizing gas injection, and revealed that daily oil recovery from the Glenn pool is about 6000 barrels as compared with 3500 barrels daily four years ago.

☆

SAM THOMPSON, Moss Petroleum Company, is president of the recently organized Petroleum Accountants Society of Dallas. Other officers are: W. F. Pope, Sun Oil Company, vice president; J. H. Jukes, Great State Oil Corporation, secretary; and John Hall, Placid Oil Company, treasurer.

B. R. SCHABARUM has joined the Carl B. King Drilling Company, Midland, Texas, as equipment engineer, having formerly been with the Empire Oilfield Shop at Odessa, Texas.

"THEY WILL RETURN"

(Upper photo) Rivers are Borneo's only highways to the interior. An arduous six-weeks river journey required only 90 minutes in a Beechcraft.

(Lower photo) Beechcraft float-equipped biplane flown by missionaries after landing on a mountain stream in the Borneo interior.

Photographs courtesy Rev. George E. Fisk (pilot), Nyack, N. Y., and Christian & Missionary Alliance, New York City.

King of the Apo Kajan tribe of Borneo is Oejong Injau. The Japanese have invaded his land. But he and his people have not forgotten the white men who came to help them, before the war. They remember well the missionaries who regularly flew in a Beechcraft over their mountainous jungles and landed on their narrow, swift-flowing rivers, to heal their sick and enlighten their kinsmen. They know that the liberating wings of the white men's aircraft have purged other lands of the Pacific from the treacherous invaders. They know that their land, too, will again be free. King Injau and his people look to the skies and say with sure knowledge: "They will return."

Beech Aircraft

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WICHITA, KANSAS, U. S. A.

Volumetric Displacement Rule Criticized At Texas Railroad Commission Hearing

The Texas Railroad Commission recently held its first hearing on the new volumetric displacement rule for state gas wells. The new rule became effective October 20.

Under this program, a displacement factor is applied to gas wells producing from sands in which there is an oil column. Heretofore, such wells were controlled by the rule which allows production of a maximum of 25 percent of the potential.

Tide Water Associated Oil Company and Seaboard Oil Company protested that this program would interfere materially with their operations in the Cayuga and Long Lake fields. The companies have constructed cycling plants and are processing the gas from oil wells and gas wells, and selling the residue for light and fuel.

They presented evidence to show that the pressure maintenance program was successful and that if they are unable to market the residue gas, then the production program generally would be curtailed to an extent that would be injurious to the field.

Lone Star Gas Company likewise presented evidence to show that it has been diligent in its conservation program in this field and that a large system has been built up to dispose of gas produced here.

Lone Star has a maximum demand of 153,795,000 cubic feet daily for its lines going north and west, and 29,400,000 cubic feet more is needed to supply another line. Company officials said only 58,000,000 cubic feet of gas would be available from the two fields under revised Rule 6. No other gas is available to this line, it was said.

Officers Reelected by New Mexico Association

C. J. Dexter of Artesia, New Mexico, was re-elected president of the New Mexico Oil and Gas Association at the 16th annual convention in Artesia, December 6.

Also re-elected were Van S. Welch, Artesia, vice president, and Harry Leonard, Roswell, treasurer.

Ralph L. Hendrickson of Hobbs was elected to the executive committee, succeeding J. S. Griffith, resigned, and re-elected to the group were M. E. Baigh and Emery Carper of Artesia, F. J. Danglade of Lovington, and Dan D. Bodie and J. N. Dunlavey of Hobbs. Hugh L. Sawyers of Roswell was re-elected executive secretary.

Educational Pamphlets

Standard Oil Company (New Jersey), Room 1626, 30 Rockefeller Plaza, New York 20, New York, has prepared two educational pamphlets on petroleum, which are ready for distribution. "New Frontiers," discusses raw materials developed through research, with special emphasis on new materials from oil. "Smoke Is Saving Lives," tells the part oil is playing in a vital phase of combat activity in the war.

Dutton Appointed

E. M. Dutton, associate director and auditor for the Arkansas Oil & Gas Commission, has been appointed acting director of production and conservation, replacing Alec M. Crowell, resigned.

Bonnie View Field Rulings Asked of Texas Rail Group

Operating rules for Bonnie View field in Refugio County were proposed to the Texas Railroad Commission.

P. R. Rutherford explained that there are two producing horizons in the field and asked that wells be spaced 466 feet from lease lines and at least 800 feet apart. He asked 20-acre proration units and 100 percent acreage proration.

This program was opposed by United Producing Company, which called for wells 330 feet from lease lines and 900 feet apart, in accordance with PAW specifications.

Stanolind Oil and Gas Company preferred this spacing and 40 instead of 20-acre units. It has a small amount of acreage which may prove productive.

Testimony pointed out that the field is producing from the Placedo and the Upper Greta horizons. The Placedo is about 35 feet thick in the discovery well and Middle Greta about 20 feet thick. Both fields have considerable shale, silt and bentonite.

San Joaquin Producers Hear Gearhart Speak

San Joaquin Valley Oil Producers Association, held its annual dinner at the Hotel El Tejon, in Bakersfield, California, December 12, when a talk was given by United States Representative Bertrand W. Gearhart of California, a ranking member of the House ways and means committee. Thomas W. McManus, secretary, presented present and postwar problems facing the oil industry in government.

A PAW representative was also present and explained details of the oil subsidy plan.

Oklahoma U. Asks Funds to Expand Geology Dept.

The Oklahoma legislature will be asked to appropriate $400,000 to expand geology work at the university, according to Dr. George L. Cross, president of the school. The funds will be used for new buildings and equipment and to establish new courses in geology and kindred sciences.

Clint Small Speaks

The East Texas Chapter of the American Petroleum Institute held its regular monthly meeting on December 6, in Kilgore. Senator Clint Small, former state senator and now with the Tennessee Gas & Transmission Company, gave a talk on "Natural Gas from Texas."

DEAN TERRILL of the Kerlyn Oil Company, Oklahoma City, has been named to the public lands committee of the Interstate Oil Compact Commission.

Vigilance Against Continued Wartime Controls Is Urged

Clarel B. Mapes, secretary-treasurer of the Mid-Continent Oil & Gas Association, told the Oklahoma Mineral Industries Conference at Oklahoma City, December 5 that the oil industry must maintain vigilance against continuing federal wartime controls into a peacetime economy.

Declaring that the industry faces no real reconversion problems, Mapes said: "Our problems after the war will be mainly economical. However, oil operators in all parts of the country must be vigilant in preventing the federal government from prolonging useless control of the industry which has been necessitated by the war."

Oklahoma Oil Scouts Name Officers in Annual Meeting

Virgil Cole of the Ohio Oil Company was elected president of the Oklahoma Oil Scouts Association at the annual meeting in Sulphur, Oklahoma. Other officers were J. R. Morris, The Pure Oil Company, vice president; Charles Pickett, Sun Oil Company, secretary-treasurer, and Fred O. Jackson, Phillips Petroleum Company, editor of the yearbook. Clyde Goodman, chief scout for Oklahoma Natural Gas Company, was the principal speaker.

Sulphuric Acid Put Under Allocation by WPB Order

The War Production Board placed sulphuric acid under allocation December 1 in a move to insure adequate supplies of the chemical for the oil industry and other major consumers.

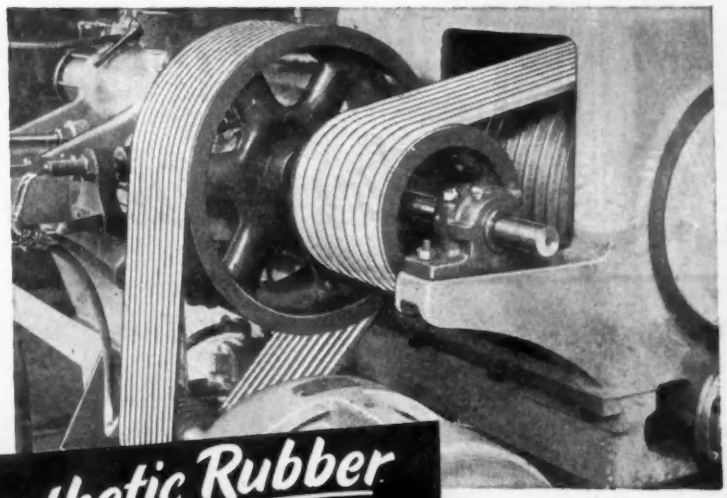
Under the terms of schedule 74 of General Allocation Order M-300, persons placing orders with suppliers for delivery of 500 tons per month from all suppliers must furnish each supplier with a certified statement of proposed use. It is also provided that the recipient of sulphuric acid for a particular use may, without application or specific authorization, use the residual acid for any other purpose, except for superphosphate production, if it is no longer suitable for the original purpose.

Control of the acid was necessitated by the stepping up of the Army ordnance program and a serious shortage of sulphuric which is expected to prevail through at least the first half of 1945. It is estimated that supplies of new and spent acid this year will fall more than 900,000 tons short of meeting requirements and that a deficiency of more than 400,000 tons may be experienced during the first six months of 1945.

The petroleum industry is the third largest consumer of sulphuric acid, with an estimated requirement for 1,477,000 tons this year and 890,900 tons in the first half of next year.

Kline Gives Paper

Los Angeles Basin Chapter of the American Petroleum Institute heard a paper, "Oil for the Lamps of America," by Mortimer Kline, at the December 5 meeting, at Signal Hill, California. The paper covered the foreign oil situation. Guy Corfield gave an illustrated talk on synthetic rubber, titled "Southern California Synthetic Rubber Project."



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This fact is important to you now because every improvement developed by Gates for these Army belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

It is only rarely, of course, that improvements developed primarily for army combat use can be passed on immediately to the general user—but there are very good reasons why Gates has not been called upon to withhold these important V-Belt improvements from Industrial V-Belt users.

The plain fact is that no guns, no tanks, no airplanes can be produced unless V-Belts are supplied to drive the producing machines. It is equally clear that better V-Belts than ever before have been urgently needed to keep machines going on the forced-draft, war-production schedules that have had to be maintained 24 hours a day!

That is why Gates has been able to embody in the standard Gates Vulco Rope every V-Belt improvement which Gates specialized research has developed for use on the Army's motorized equipment—and that is why you are finding that your standard Gates synthetic rubber Vulco Ropes are today giving you better service than any V-Belts that were ever built before the war.

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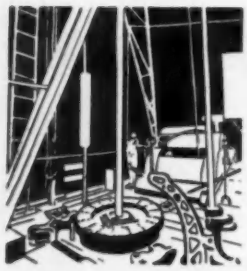
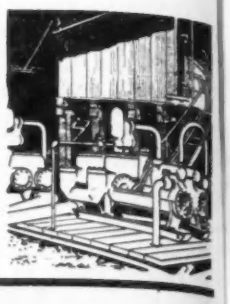


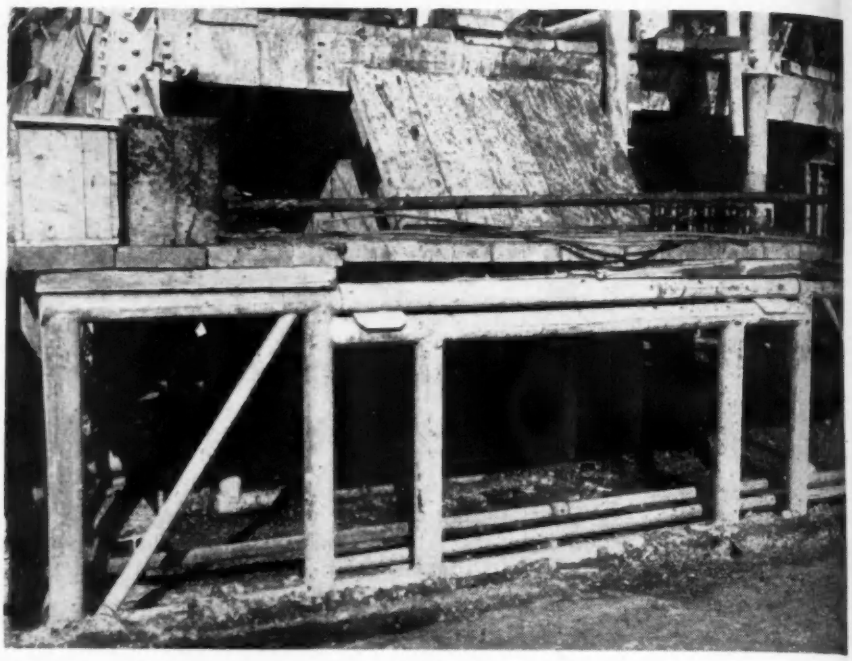
OPERATING HINTS *For Drilling Crews*



Under-floor Storage Speeds Wire Line Change

To provide ample cable for quick replacement of drilling line on deep drilling wells, afford storage place for the reel in such a position that it is out of the way of general operations, and yet assure easy moving and demountability of the unit, one company designed and installed a break-away section in one side of the rig understructure. A short section of the truck-loading platform was made removable, with the outer horizontal member of that section fitted with curved shoes which rest upon a matching but lower horizontal member.

WIRE LINE HANDLING



Section of working floor, supported on removable section of substructure, may be lifted clear to afford immediate access to wire line stored below unit, and new line handled within derrick frame.

When the platform section is lifted out, the entire spool of line may be lowered into the opening and rested upon a pair of supports, a pipe axle previously run through the core permitting easy turning of the reel when in use.

One of the advantages of this type of installation is the ease with which the spool may be removed when the rig is being shifted to another location. One or two men can turn the spool taking up all slack line, and the spool then may be lifted out. No separate racks are needed for its support, and the location will be identical at each location regardless of topography or cramped space.

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Sand Line String-Up Utilities Floor Corner

On large, heavy-duty rotary drilling rigs, the sand-line reel, in the interest of space conservation, ordinarily is spotted some distance away from the rig floor—usually out on or near the pipe walk. One company eliminates this practice by placing the sand-line reel and steam engine power at ground level near one edge of the derrick floor, the controls being extended up to the floor level.

SAND LINE RIGGING-UP

By setting the real under the derrick floor, the line is protected against accidental injury, and the run to the sheave is more direct, eliminating whipping and possible slapping against derrick members, as well as facilitating inspection.

The sand line itself, instead of being run up the outside of the derrick like a high-line, is brought up through the derrick floor, the opening being fenced off at the floor level with a board enclosure. While this particular installation was placed opposite the drawworks, it need not be limited to that location for there

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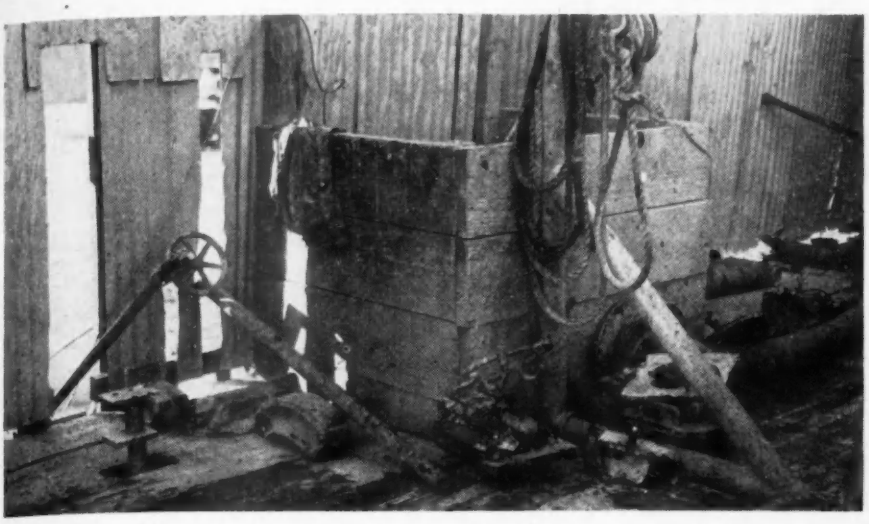


Setting the sand-line reel below the derrick floor but within the compass of the substructure permits line to be run within derrick. A light fence around the aperture preventing accidents.

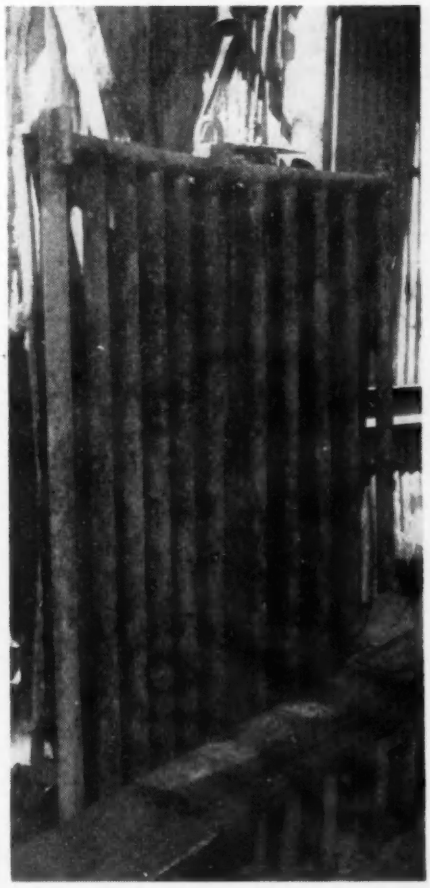
are few rigs with exactly the same machinery arrangement on or beneath the derrick floor. It is easily adapted to any rig floor arrangement and merely by adding extensions to the several controls it may be operated readily from the derrick floor.

Steam Heating Bank Improves Work Conditions

In an effort to concentrate a greater amount of heat in the area of the driller, confining it in such a way as to provide warmth for the full length of his body, one company utilizes a bank of steam lines approximately six feet high. A number of upright lengths of 2-inch pipe, welded into headers at top and bottom, is mounted beside the edge of the rig floor, across the aisle from the drawworks, and connected into an exhaust steam line. A broad "bank" of heat is thrown out and a large area surrounding the controls is made comfortably warm. A backing of sheet iron secured behind the pipes helps to confine the heat as desired.

WORKING CONDITIONS

Provision also is made for erecting an overhead shelter during inclement weather. Two small sockets are welded to either side of the top corner of the radiator in which may be placed upright supports for an awning-like shelter. A steel loop welded to the center of the bank simplifies moving the assembly, it being moved about by the high-line or a sand line.



Built man-high, this unit throws off heat to warm the entire body, speeding drying of damp clothing.

Season's Greetings

To Friends, Dealers and Consumers of Fitler Products

In time of War, Rope is a vital, strategic material to the Armed Forces on land, at sea, and in the air.

The Rope you saved has fought for you!

We appreciate the manner in which you have so heartily co-operated with us in the sale of Rope under the W.P.B. Rope Conservation Program—thus providing more Rope for the Armed Forces.

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GOOD well control equipment, proven well completion methods, and seasoned operators to assist you. If you're looking for this combination ...we have it.

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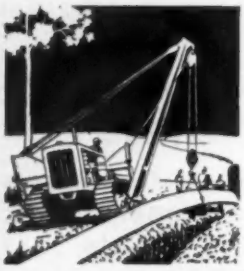
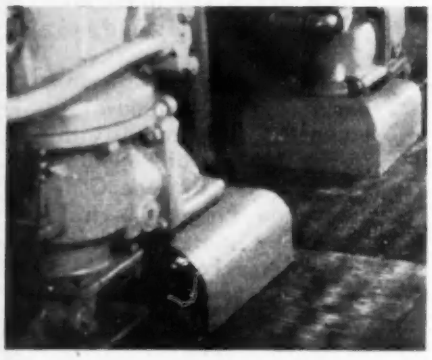


OPERATING HINTS *For Pipeliners*

Fabricated Shields Improve Exhaust Setting



Light metal shields, fitted over gap in floor, prevent lost tools and improve appearance.

EXHAUST PIPING

The opening through which the exhaust pipe passes into the trench or pit is unsightly, and too often offers a most convenient opening through which dirt accumulated ahead of the oiler's push-broom is "accidentally" allowed to fall into the pit—there to foul drains or, when oil soaked, to add to the fire hazard in the station through gas accumulations.

The welder for one station took light tank steel scrap, formed it to a smooth curve, and welded two similar sections together at right angles to form a guard which is set on the floor plates adjacent to the exhaust lines, serving to stop the edge of the opening, and also prevent accidental contact with the hot line. The stop, being set within bosses or projections on the floor plates, may be removed easily to permit work on the exhaust line, but is sufficiently heavy to protect against tools dropping into the pit.

The guard, open on two ends, does not restrict air circulation through the pit and, through the same current, is kept cool enough so it may be painted with regular machinery paint without danger of discoloration.

Station Service Ladder Safeguards Workmen

SERVICE LADDERS

The service ladder around a station often can be reworked with a little ingenuity in order to dispense with the services of a helper to hold the base while the engineer or oiler is busy at an elevated level. Such a one-man ladder is shown in the illustration, being built from light steel angles, with the top formed into hooks which fit closely around an elevated pipe and insure proper vibration-free setting.

The same type of ladder, when used in a steel building, is made with the ends formed to fit snugly over the horizontal angle brace of the building, with the hooks slipping into corrugations of the steel siding. For this purpose, the ladder steps should be made to hold the upright members at the proper distance to insure this sliding fit.

Hooked ladder with spade-type base plate insures safe placing without need of second man.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

The base is made from a piece of steel plate wide enough to afford lateral bracing of the ladder, and to prevent sagging or slumping to one side if the loading be imperfectly centered.

The steps, of 1-inch angle, may be set with the flat side uppermost to afford more comfortable footrest, or may be placed edge up when a scraper is required to insure contact between shoe and steel. This latter setting is desirable when the ladder is to be used outdoors in muddy surroundings, the former for within the buildings.

Portable Welding Shield Protects Nearby Crew

WELDING SAFEGUARDS

Although the welder is always equipped with goggles to protect his eyes against the blinding effect of the welding arc, it is not always possible to shield the eyes of others, and occasionally time is lost and serious injury results to some worker who, especially in these days of hard-to-get pipeliners, may not be acquainted with the dangerous rays of the electric arc.

One pipeline contractor, on roll-welding jobs where other work must go on adjacent to the welders, uses a shield around the weld to confine the rays. The shield is a rectangular box, of a size

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***of Pipe Laying Gangs with* BUCKEYES!**

This pioneer line of trenchers has kept a jump ahead of pipeliner's needs. Buckeye Mainliners get down the big pipes faster; keep ahead of layers and welders. They've got the stamina for toughest going in any country. Models 32 and 48 for main lines; Models 11 and 12 for small gas, gasoline and gathering lines.

BUCKEYE TRACTION DITCHER COMPANY
Findlay, Ohio
Built by Buckeye
TRENCHERS. SHOVELS. CRANES
BACKFILLERS. TRACTOR EQUIPMENT.

Box-shaped sheet metal shield, with the base curved to fit pipe circumference, encloses welding arc and prevents flash eye injuries to unprotected men working in the vicinity of welder.

sufficient to permit welding within it without being cramped, and high enough to intercept all rays which otherwise might reach a worker's eyes. The base of the box is cut out to fit closely over the curve of the circumference of the pipe being welded.

A strut or support of light rod, or even of cane when rod is not handy, keeps the shield located above the top of the joint being welded, regardless of the speed with which the roll is being turned.

It has been found that use of such a shield, in addition to protecting eyes of workers in the vicinity, also reduces the effect of high wind on the arc, making for faster and better welding under adverse weather conditions.

Saddled Posts Support Long Meter Run

METER SETTINGS

Permanent supports for the meter run in a large diameter line were formed by burying in concrete pipe pedestals of the desired size, capping each with a saddle formed from steel plate or cut from a pipe of the proper diameter to hug closely the line to be supported.

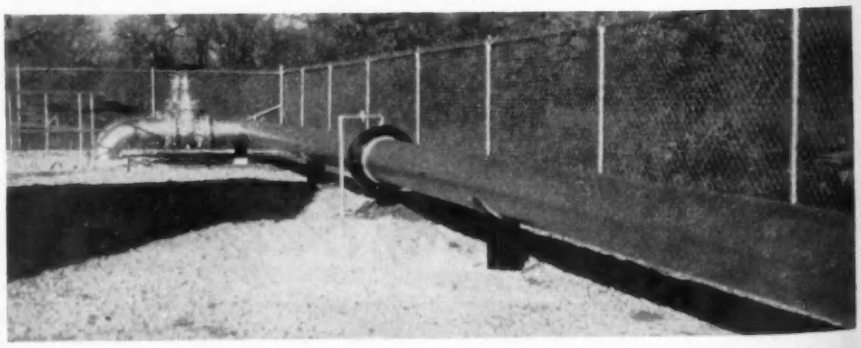
To align the saddles and insure the required level meter run, the line was blocked up on either side of the excavations for the support posts, and carefully leveled. The saddles were then clamped to the pipe, and concrete poured around their bases. This method utilized the meter run as support for the posts until the concrete has set, after which the cribbing was removed and the pipe allowed to rest as designed in the saddles.

Barricade Support Aids Open Trench Protection

OPEN TRENCH PROTECTION

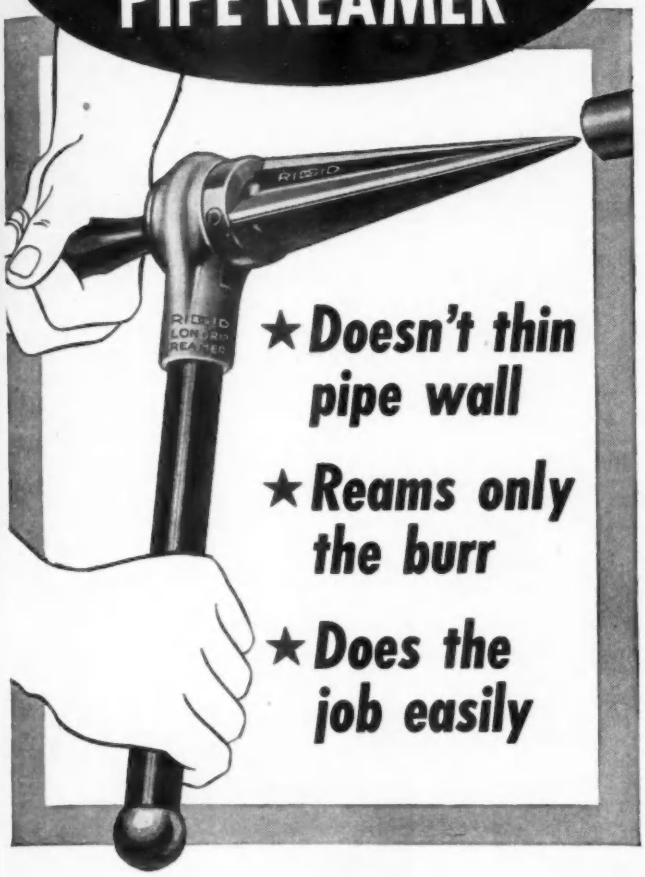
Warning lanterns and barricades are necessary safeguards when a pipe line trench is near a highway. The usual tripods of scrap lumber are unstable, the lumber often is appropriated for other uses, and the lanterns slung from unsteady supports are frequently broken or damaged by storm or wind so that the warning light is extinguished when most necessary.

One pipe line contractor utilized scrap material to make up a special barricade post which serves a dual purpose. To a plate steel base is welded a 2-inch pipe upright, some 42 inches in length. Near the top of the upright are welded two oblong loops formed from scrap rod material. These loops have an opening about 8 inches in the clear, permitting a piece of 1x6-inch lumber to be slipped



Wide saddles, formed to fit meter run pipe, are welded to heavy pipe posts, and the unit set in concrete to insure pipe level without interfering with endwise shift of pipe under expansion.

RIDGID
New Extra-Long-Taper PIPE REAMER



★ Doesn't thin pipe wall

★ Reams only the burr

★ Does the job easily

• With easy feather-light ratcheted strokes of this new reamer you whisk the burr from any pipe—but *only the burr*. For the extra-long taper of this RIDGID tool keeps you from thinning pipe or conduit wall, prevents splitting or flaring. You save work—and pipe. It's complete with ratchet handle—or you may buy reamer unit only, for use in your RIDGID 00R threader handle. Try this smart reamer—at your Supply House.

PERFECT THREADS *more quickly*
on 1" to 2" pipe

RIDGID
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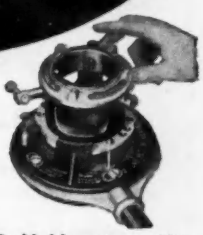

Workholder sets to pipe size instantly.

Dies set to pipe size in 10 seconds.

• Smooth clean precision threads on 1", 1¼", 1½" and 2" pipe—and all with the same set of 4 chasers that stay in the die stock. No changing dies, no extra dies to carry around—you set the 65R to size in a mere 10 seconds. Workholder's still quicker—turn gauge plate to size instantly—tighten only one screw. You'll like this fast easy-threading worksaver RIDGID—ask for it at your Supply House.

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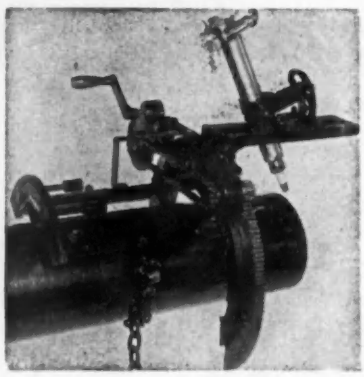

The H & M Pipe Cutting and Beveling Machine cuts any size pipe with speed, economy and accuracy.

SPEED: Complete cut and bevel can be made on 12 inch pipe in about 2 minutes.

ECONOMY: Save approximately one-half labor and gas costs.

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Steel disks, carrying 2-inch pipe supports to which have been welded light rod loops near the top, insure retention of board stops and prevent loss or swaying of warning lanterns on posts.

through loops of two of the supports and a visible barricade thus formed. The loops, being spaced at 180 degrees around the post, permit barricading lumber to be inserted from both ways, forming a continuous stop if required.

The loop affords a support or stop for the bail of the lantern, which is simply hung over the upright and lowered until it comes to rest against the shoulder formed by a loop. The timber through the loop prevents further downward travel and insures retention of the light at the proper height.

Saddle Anchors Line Against Slope Shifts

PIPELINE ANCHORAGE

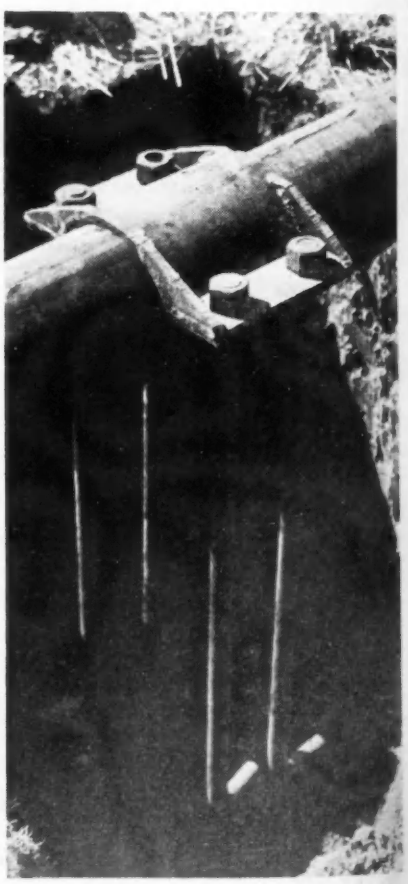
Surface-laid lines which traverse rough country present a problem in that movement of the line due to expansion and contraction or vibration on the steep slopes exerts a great strain on joints, welds and fittings which, if not taken care of, will in time cause weak spots with attendant leaks. One means of overcoming this trouble is the practice of embedding a portion of the line in a concrete block laid at the surface or in welding lugs to the pipe and securing them to fixed objects, snubbing the line.

Overcoming some of the disadvantages of these methods is a system employed by one company having considerable production in extremely rugged terrain. At a point midway or slightly lower than the center of the slope, a hole is dug beneath the line and a shop-made, saddle-like fitting is laid over the line.

The bracket consists of a short half-section of casing having an inside diameter equal or nearly equal to the outside diameter of the line pipe and which has been modified in the manner illustrated. Two lips and bracing fillets are welded to its sides to provide added leverage and strength. In large holes burned in the four corners of the fitting are cold-rolled rods which have been turned at their lower end through a right angle for a short part of their length and whose upper ends have been threaded for several inches and fitted with heavy nuts. Pouring a comparatively small amount of concrete into the hole and filling in the remainder with earth provides a substantial anchor. As soon as the concrete is set sufficiently, the nuts may be tightened, firmly anchoring the line to the ground and preventing slippage of the line.

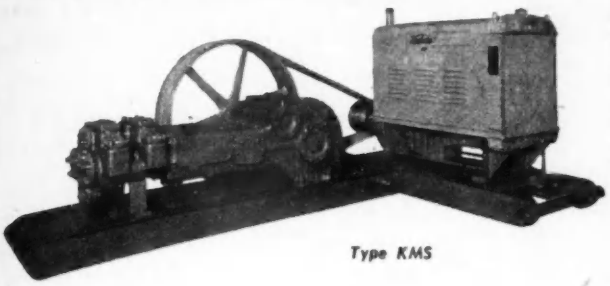
Aside from the advantages found in being able to adjust tension on the anchor bolts or remove it entirely if necessary, there is the advantage of being able to salvage the entire fitting and, when re-fitted with another set of anchor bolts, it is then available for a new installation.

The tendency of the anchor to close around the pipe under bolt tension insures a firm grip, though welding may be used if required.



Snugly hugging upper section of pipe, bolt tension against concrete block prevents shifting.

LOCKETT-WORTHINGTON POWER-DRIVEN PUMP UNIT



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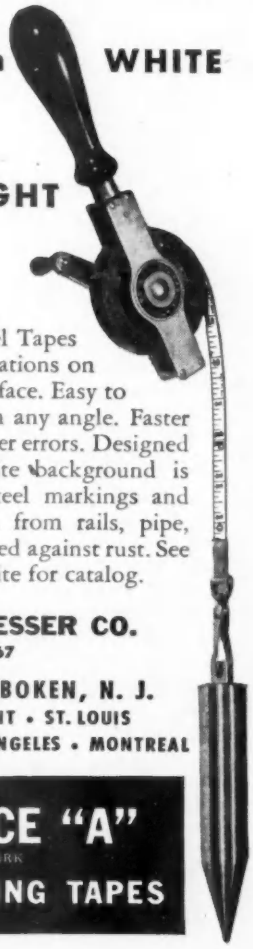

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THE MAYO TULSA OKLAHOMA

Progress of Government-Industry War Emergency Pipe Lines is Outlined

Government-industry war emergency pipe line projects are adding much oil to the war effort. Big-Inch and Little Big-Inch, the two major pipe line projects of the war, are delivering oil and products to the east coast in an unending stream.

Other projects carried over from last year, new projects completed this year, and projects to be completed in 1945 are in the following phases of operation or completion:

Projects 6 and 10: Little Big-Inch, officially the War Emergency Pipe Line, Inc., started in 1943 and completed in March, 1944, delivering products from Beaumont, Texas, to the East through 1640 miles of 20-inch new line. Constructed at a cost of $75,000,000, its capacity is 116,000 barrels.

Project 21: Stanolind Pipe Line Company completed 385 miles of 16-inch crude oil line from the Slaughter area of the West Texas Permian basin to Drumright, Oklahoma, at a cost of $7,600,000.

Project 22: Magnolia Petroleum Company completed 333 miles of 12-inch line from Midland, Texas, to Corsicana, Texas, and two 8-inch loops of 41 miles at a cost of $6,000,000. Capacity is 42,000 barrels per day.

Project 23: Yale Pipe Line Company constructed 37½ miles of 6-inch line and 45 miles of 8-inch line connecting the Elk Basin and Frannie field with refineries at a cost of $830,000. Capacity is 15,000 barrels.

Project 24: Stanolind completed 70 miles of 8-inch and 160 miles of 10-inch line with a capacity of 44,000 barrels per day at a cost of $4,000,000 to give an additional outlet to the Elk Basin and other pools in Wyoming.

Project 25: Ohio Oil Company will complete 115 miles of 8-inch products line from Robinson, Illinois, to Indianapolis before the end of the year.

Project 26: Pan American Pipe Line Company completed 34 miles of 8-inch crude line from the Willamar area of Southwest Texas to Port Isabel, giving an outlet of 10,000 barrels per day to this pool.

Project 27: Gulf Oil Corporation completed 75 miles of loop in its 10-inch crude line from West Texas to Ranger, Texas, and 2 8-inch loops totaling 41 miles in a line connecting with the Big-Inch at Longview, thereby delivering 16,000 barrels per day.

Project 28: Texas Pipe Line Company complete 34 miles of 6-inch products line from Lockport, Illinois, to East Chicago.

Project 29: Colonial Beacon Oil Company will complete 35 miles of 4- and 6-inch products line from Everett to Methuen, Massachusetts, this year.

Project 30: Stanolind completed 3 loops in its 16-inch line between Drumright and Sycamore for 41 miles.

Project 32: The outlets to the Elk Hills Naval Reserve will be completed this year by the 3 major oil companies participating in the construction of the line. Union Oil Company of California, General Petroleum Corporation of California and The Texas Company undertook this project.

Project 33: Texas-New Mexico Pipe Line Company will complete the 30.2 miles of 12-inch loops on its Crane to Houston line early in 1945.

Project 34: Gulf Refining Company will start soon on the 63 miles of 8-inch crude line from the Keystone-Ellenburger area to Midland, Texas.

Project 31: Utah Oil Refining Company has completed 111 miles of 6-inch crude outlet to the Craig area of Colorado.

Kansas-Nebraska Program Of Construction Near End

Kansas-Nebraska Natural Gas Company is completing a program involving the building of a compressor station 4 miles west of Scott City, Kansas; laying of 172 miles of pipe line; installation of two additional compressor stations at Stockton and Alma, Nebraska; and the drilling of 17 gas wells in the Hugoton pool.

New pipe line includes 41 miles of 18-inch from the Hugoton pool to the Scott City station; 100 miles of 12¾-inch from Scott City to Wakeeney; 15 miles of 8⅝-inch to the Stockton compressor, and 16 miles of 12¾-inch from Stockton to Glade.

Kansas Line Laid

Midwestern Engineering Company, Tulsa, has finished laying 32 miles of 22-inch loop lines at Liberal, Kansas, for the Panhandle Eastern Pipe Line Company.

Work Begins on DPC Carbon Black Plant in West Texas

Construction work is underway on the Defense Plant Corporation's two-unit carbon black plant 9 miles southwest of Odessa, Texas. The plant will have a capacity of 60,000,000 feet daily, and will be operated by the United Carbon Company of Charleston, West Virginia. It will operate on residue gas from the Cities Service Oil Company's natural gasoline plant in the North Cowden field and those of the Phillips Petroleum Company in the Goldsmith, Pennwell and McElroy fields, thus requiring an extensive feeder-line system.

☆

DR. ROBERT E. FEARON, geophysicist with Well Surveys, Inc., addressed the Mid-Continent section, AIMME, at the Mayo hotel, Tulsa, December 11 on "Recent Developments in Technique and Application of Radio Activity in Well Logging."

PAW Approves 10-Mile Line To Ector County Production

Shell Pipe Line Company, Houston, has received approval from PAW to construct approximately 10 miles of 6-inch gathering line from its Wheeler pool pump station to new production on the Thomas ranch in Ector county.

Starting date will depend on the delivery of materials. This project also will include 1000 feet of 4-inch extension to the lease storage in the Wheeler area. Shell Oil Company has extensive acreage in this area which has one well, with other tests drilling.

Hugoton Pool Producers Oppose Carbon Black Plant

Gas producers in the Hugoton pool, Texas County, are opposed to the construction by Cabot Carbon Company of a channel process carbon black plant at Guymon and have asked the Oklahoma Corporation Commission to set a hearing on a petition to revoke a permit issued recently for construction of the plant, which would be permitted to use 30,000,000 feet of Hugoton gas per day.

The commission granted the permit November 24 as a "war emergency measure" after being urged to do so by agencies of the federal government. Petitioners for the rehearing are Cities Service Gas Company, Magnolia Petroleum Company, Panhandle Eastern Pipe Line Company and Northern Natural Gas company, who assert there is an ample supply of gas for the purpose in other fields and that the Hugoton supply should be conserved for "superior uses."

FPC Permits Pipe Line Changes in Pennsylvania

Federal Power Commission on November 28 issued a certificate of necessity to the United Natural Gas Company, Oil City, Pennsylvania, for construction and operation of a 37½-mile 12¾-inch pipe line between its Beaver County and Venango County compressor stations in Pennsylvania. The company was also authorized to operate an already-constructed 18.2-mile pipe line of similar diameter connecting two of its Venango County stations.

The new facilities are provided to permit the company to get 3,160,000 Mcf of natural gas annually from the Manufacturers Light and Heat Company, under a ten-year contract approved by the commission last July.

West Edmond-Oklahoma City Line Virtually Complete

Standish Pipe Line Company's 28-mile outlet from the West Edmond pool is 80 percent complete with all pipe strung and pumps and gathering systems installed. Oil is expected to move between December 20 and January 1 from the pool to Oklahoma City. Phillips Petroleum Company and Sohio Oil Company will operate the line.

Lower Refinery Runs Cause Declines in Production and Stocks of Products

A let-down in refinery runs and crude production during the week ended December 9 had adverse effects generally on the industry's statistical situation. Production of all major products declined from the previous week's rates, and there were heavy drafts on stocks of both distillate and residual fuel oil, while the seasonal build-up of gasoline stocks was less than normal.

United States crude production of 4,704,000 barrels daily was 8000 a day less than in the previous week although 328,000 daily or 7.5 percent more than output in the corresponding week last year.

Crude run by United States refineries averaged 4,552,000 barrels daily, down 141,000 a day from the week before, although 390,000 daily or 9.4 percent above runs in the like week a year ago.

Production of gasoline, including natural blended at refineries, averaged 2,087,000 barrels daily, down 35,000 a day from the week before but 294,000 daily or 16.4 percent above output in the like week last year. Stocks of finished and unfinished gasoline were increased at the rate of 65,000 barrels daily, having risen to 80,880,000 barrels. That amount was 10,000,000 barrels or 14 percent more than the 70,855,000 barrels held December 11 last year.

Gas oil and distillate fuel oil production averaged 579,000 barrels daily in the week ended December 9, a decrease of 4000 from the previous week's daily average and 80,000 a day or 12 percent less than output in the like week a year ago.

Residual fuel oil production averaged 1,275,000 barrels per day, down 8000 daily from the week before but 100,000 a day or 8.5 percent more than production in the corresponding week last year. Stocks of residual were drawn upon at the rate of 182,000 barrels daily, having declined to 60,458,000 barrels. That amount was 1,304,000 barrels or 2.2 percent more than the 59,154,000 barrels held on the corresponding date a year ago.

Stocks of crude oil stood at 221,591,000 barrels on December 2, the Bureau of Mines reported. That was 369,000 barrels less than a week before, and was less than a million barrels above the 23-year low touched in early September of this year.

Mexico's Production Falls Below Previous Month

Mexico's petroleum production in October was 2,371,112 barrels, compared with 2,408,559 in September. Exports amounted to 338,631 barrels in October, against 538,802 in September.

At the October rate of output, which was 76,500 barrels daily, Mexico was producing on the basis of approximately 28,000,000 barrels annually. In 1937, last year prior to the expropriation of private properties by the government, Mexico produced 47,000,000 barrels.

West Edmond Play Draws Firms to Oklahoma City

Shell Oil Company's production, geological and land departments of the Oklahoma division are being transferred from Tulsa to Oklahoma City. About 30 families are being transferred and the move is expected to be completed by March.

Cities Service Gas Company recently transferred headquarters from Bartlesville to Oklahoma City and Kingwood Oil Company may move headquarters from Effingham, Illinois, to Oklahoma City.

Another move involves transfer by Stanolind Oil & Gas Company of its Shawnee district office to Oklahoma City by the end of the year.

Development of the West Edmond pool and anticipated drilling in central Oklahoma were reasons advanced by company officials for the transfers.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 3
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	[1]4,762	9-30	[1]4,775	9-30	240,992	1- 1	89,162	4- 1	48,863	10-28	64,644	10- 7
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	[4]220,623	9- 9	76,302	1- 1	30,232	4-29	49,737	3-18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	247,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	[1]4,762	[1]4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,426	4,082	45,832	8,981	61,727
Dec. 9, 1944	**4,704**	**4,552**	.....	**14,611**	**80,880**	**4,056**	**44,436**	**8,923**	**60,458**
Dec. 11, 1943	4,376	4,162	[5]241,165	12,552	70,855	4,613	44,652	8,224	59,154
Change:									
In week	—8	—141	—369	—242	+454	—26	—1,396	—58	—1,269
In year	+328	+390	—19,574	+2,059	+10,025	—557	—216	+699	+1,304
In year	+7.5%	+9.4%	—8.1%	+16.4%	+14.1%	—12.1%	—0.5%	+8.5%	+2.2%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, December 4, 1943.

International Developments

Creole Completing Three Wells Weekly in Venezuela

Creole Petroleum Company is completing about three wells a week in the Maturin, Monagas area, Venezuela. Principal activity is centered in the Jusepin field, where the company is operating nine rigs.

Development of the Mulata field, immediately to the west, also is proceeding rapidly. Six rigs were being operated there in late November. Three operations, including a workover job, were under way in the San Joaquin field in central Anzoategui. Creole drilling activities in the Lake Maracaibo region during the third week of November included three development wells in progress in the Lagunillas field and two extension tests at undesignated locations.

Forcing Causes Depletion Of Reserves in Trinidad

The forcing of Trinidad wells to meet war requirements has resulted in abnormal depletion of reserves, according to company officials.

Little exploratory drilling has been carried on since 1941 and development drilling has likewise been greatly curtailed. Because of British restrictions it has not been possible to do marine wildcatting in the Gulf of Paria, though production is virtually assured in several fields that can be extended into the Gulf. Prospects for marine extensions are particularly good in the Point Fortin, Perseverance, Kern and Brighton fields, southwest of La Brea. Marine acreage adjacent to the Cedros field is also considered promising.

Three Wildcat Operations Are Under Way in Ecuador

Anglo Saxon Oil Company's Arajuno 1, wildcat in the eastern Andes Foothills, has been held up by crooked hole trouble, although more than 2000 feet of hole had been made by early November.

In the coastal area west of Guayaquil, International Petroleum Company has abandoned Carizal 1, a wildcat test, and was drilling its Daular 2 wildcat.

At the end of November International's Camarones 1, on the Esmeraldas coast in extreme northwestern Ecuador, was drilling below 3700 feet. It was this well that was erroneously reported to have blown-in wild late in October.

Mene Grande Operating 21 Drilling Rigs in Venezuela

Mene Grande Oil Company is operating 21 drilling rigs in Venezuela, nearly all of them being assigned to development drilling in the Greater Oficina area. In the second week of November, in the Guara area, the company had ten drilling wells, two completions and a workover operation.

In the Oficina field proper Mene was performing four workover jobs and was in process of testing a new well at completion depth. In the Travieso area, west of the Santa Barbara field, the same company was drilling two wells and testing two more. Single drilling operations were under way in the Yopales, and Santa Rosa fields. The only active Mene Grande operation in western Venezuela was a sidetracked workover job being completed in the Lagunillas field, Lake Maracaibo.

Richmond Exploration Gets Large Acreage in Venezuela

Oil concessions covering 1,750,000 acres on the west side of Lake Maracaibo, Venezuela, have been secured from the Venezuelan government by Richmond Exploration Company, a subsidiary of Standard Oil Company of California. The concessions provide for exploration, exploitation and drilling, under the Venezuelan law of 1943, in the districts of Urdaneta and Perija, in the State of Zulia.

Preparation for geological and geophysical exploration is well under way by Richmond Exploration Company, and actual work in the field should be started soon. Plans are being made for early exploratory drilling.

Approximately 350,000 acres of the total concessions are under water, on the lake bed.

Six-Well Peruvian Field Averages 100 Barrels Daily

Ganzo Azul Petroleum Company, operators of the Blue Goose (Aqua Caliente) field east of the Andes of the Ucayali River in Peru, is operating the 6 wells in the field at a rate exceeding 100 barrels per day each, and is running its 500-barrel refinery at capacity.

Storage and distribution depots have been established at Iquitos and Manaos, on the Amazon, and both crude and products are being sent by barge as far as Para at the mouth of the Amazon. Additional wells and greater refining capacity are planned. Potential producing rate of the field is estimated at 2700 barrels per day.

Concessions Sought

Phillips Venezuelan Oil Company has filed petitions for concessions covering 24 separate lots of land in the states of Miranda, Guarico and Anzoategui, Venezuela. Most of the lots are 10,000-hectare blocks. The total amounts to approximately 217,000 hectares.

Block Filled in

Mene Grande Oil Company, largest concession holder in the Aragua de Barcelona area of northwestern Anzoategui, Venezuela, has obtained title to three parcels in the vicinity, adding 20,000 hectares to its exploration-exploitation tracts west of the San Joaquin field.

Drilling Resumed

Drilling has been resumed at the Mary 1, Lion Oil Refining Company's second wildcat test on the western shore of Cape Breton Island, Nova Scotia. Operations were halted in late November to repair drill pipe, with hole made to 6510 feet.

Exploration Is Under Way In Buenos Aires Province

Under the terms of a year-old contract with the Argentine Y. P. F., geophysical explorations are in progress for the first time in central and southern Buenos Aires Province.

A gravimeter crew and a torsion balance party, using four instruments, are mapping the region on a one-kilometer station grid. Three refraction seismograph parties are doing follow-up detail mapping where subsurface structure is indicated.

Almost nothing is known of the subsurface geology of Buenos Aires Province, since it is nearly completey covered by thick quaternary deposits. Y. P. F. reports that results of the geophysical studies to date indicate that structural closures exist in the bedrock section, and several wildcat test wells will be drilled in the most promising localities next year.

Five Tests Being Drilled By Socony in Venezuela

Socony-Vacuum Oil Company had five drilling operations in progress in Venezuela at the end of November. Two were in the Guario field, San Joaquin area, and three in the Guico field, an extension of the producing area of the West Guara field, opened and developed by the Mene Grande company.

Floresanto Idle

Drilling operations were suspended November 29 for electric logging of the Floresanto 1 wildcat, in the middle Sinu River area of northwest Colombia, with depth of the well 3640 feet. The well is the first test of the Floresanto block, held by Socony-Vacuum Oil Company and Tropical Oil Company.

JAMES E. WISE, 47, oil producer of Tulsa, died December 8. He was a native of Pennsylvania and was associated with several major oil companies before engaging in business with his son, James S. Wise, as the Wise Drilling Company.

E. J. LAMBERT, former president of Lambert Oil & Gas Company of Tulsa, died in Philadelphia December 10. He was in the oil business in Tulsa from 1913 to 1937, when he moved to Illinois and later to Independence, Kansas.

DR. C. W. TOMLINSON, consulting geologist of Ardmore, Oklahoma, spoke on "Correlation of the Pennsylvanian of North America" before the Geological Society at Shawnee, Oklahoma.

MISS MARGARET LOWERISON, personnel and payroll clerk in the Tulsa offices of The Carter Oil Company, has retired. She served under five Carter presidents during her 25 years of service.

A. M. GRIFFITH of Wichita, Kansas, has been appointed field representative for Kansas for IPAA. He formerly was an oil operator in Kansas, Oklahoma and West Texas.

U. S. Field Operations

Oklahoma

South Moore Strike Among State's Best of Year

Flowing 670 barrels in 24 hours through ¼-inch choke, Helmerich & Payne, Inc., and Mid-Continent Petroleum Corporation's Brand 1, NE SE SW 26-10n-3w, established Bartlesville sand production for the South Moore pool of Cleveland County. The well is one of the best completed in Oklahoma this year. Dry in the deep Wilcox zone, at 9219 feet, total depth, operators backed up and perforated at 7742-72 feet. Casing pressure was 900 pounds and 1000 pounds on the tubing.

West Edmond: With oil men claiming "some kind of a producer" for Collett 1, C SE NW 25-15n-5w, southeastern Kingfisher County and 2 miles northwest of nearest production, Anderson-Prichard Oil Corporation continued testing various sections of a 97-foot Hunton lime zone topped at 6985 feet. Basal or Chimney Hill section was tested to recover about 7 barrels of oil in 15 hours. Crew was ordered to back up for a test of lower Bois D'Arc. Meanwhile The Atlantic Refining Company, with 320-acre south offset lease was moving in tools for Trimble 1, C SE SE 25-15n-5w.

The field has 281 producers, of which 275 are in the Hunton and 5 oilers and a gasser in the Bartlesville zone.

Creek County: L. B. Jackson and Deep Rock Oil Corporation's Putnam 1, NE NW SE 17-18n-10e, injected new life into the old Kellyville district when the test was completed as the first flowing well in Creek County in many years. Production is from Dutcher sand topped at 2735 feet and flow was estimated at approximately 85 barrels daily. Deep Rock's Reynolds 1, SW NW NW 1-14n-9e, northeast of Newby, had Dutcher sand at 2467 feet and was waiting on cement at 2472 feet.

Grady County: Phillips Petroleum Company staked Duke 1, SW SW SE 28-5n-8w, for an 8500-foot test on the west flank of the Chickasha gas pool in an attempt to develop oil production. Several unsuccessful tries have been made in the general area including 2 deep failures by Skelly Oil Company in Sec. 8, and Ohio Oil Company in Sec. 18. Gas production in Chickasha is from several horizons above 5200 feet.

Garvin County: Development of the East Pauls Valley oil pool opened by Ohio Oil Company early this year continues, with Ohio staking 3 locations to keep the west side of the structure active. New wells include Byington 3 and McKinney 6 in Sec. 18, and Lewis 1, in Sec. 16-3n-2e. Helmerich & Payne, Inc., is deepening Freeman 3-A, wildcat ½ mile south of the shallow Hoover pool after tests at 970-78 and 1176-1226 feet failed despite previous good gas and oil shows in the horizons. Same operators staked Simpson et al 2, NE NE SW 14-1n-1w, ½ mile northeast of the pool on an Ohio farmout and will drill to 2500 feet.

Okfuskee County: Wilcox Oil Company was preparing to test a good oil show in Wind 1, NE NE SW 31-11n-10e, about a mile northeast of the Okemah pool. Pipe was set at 2920 feet following gas show in drill stem test at 2924-58 feet.

Coal County: The Carter Oil Company continues workover at Thompson 7, NE NW 34-2n-9e, an old well in the Centrahoma pool which may prove a Cromwell sand producer. The well developed an oil leak behind the casing and crew was ordered to plug back from 7126 feet to 6330 feet. Perforated opposite Cromwell zone at 4905 feet, the well flowed an estimated 200 barrels of oil in 24 hours.

McClain County: Carter was coring below 10,813 feet in Simpson topped at 10,720 feet, in its Lamar Ranch 1, C NE SW 28-8n-3w. Core at 10,811-10,813½ feet recovered 1 foot, 10 inches of which 1 foot, 6 inches was dark dolomite and 4 inches coarse dolomitic sand with slight oil stain, formations showing 25-25 degrees dip. Meanwhile Carter started its seventh Anadarko Basin wildcat test on its big McClain County block, spudding Bell 1, C NW NE 33-8n-3w, ½ mile southwest of the Lamar Ranch test. Two previous deep tests opened new oil pools, 1 was a failure and 3 are drilling.

Logan County: A campaign to locate possible Hunton or Wilcox sand traps off the west flank of Layton sand pools in western Logan County got under way as Amerada Petroleum Corporation staked Dodd 1, SE NW NW 31-18n-4w, on a 6000-acre block acquired from Bahan Brothers for $30,000 plus a sixteenth override. The first test is on the west flank of the Lovell pool. F. C. Hall's Perdue 1, SE SE SW 24-19n-4w, topped Layton sand and logged stains and odor at 4684 feet and was drilling below 4714 feet. Sinclair Prairie Oil Company's Harp 1, NW NW SE 28-18n-2w, dry in first and second Wilcox, at 6017 and 6108 feet, respectively, was plugged back to test Tonkawa sand at 3327-38 feet.

Beckham County: Tide Water Associated Oil Company et al's Baldwin 1, SE NE NE 10-9n-25w, closely watched wildcat spotted on the highest point of the Erick structure, logged top of the dolomite at 3116 feet and was drilling below 3217 feet.

Wells Completed in United States in Week Ended December 16, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	1	37	2
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	6	5
Arkansas	6	....	....	1	7	....	....	....	....	....	7	2	219	244
California	37	2	....	....	39	....	....	....	4	4	43	45	1,981	1,410
Colorado	....	....	....	....	....	....	....	....	2	2	2	....	28	28
Florida	....	....	....	....	....	....	1	....	2	3	3	2	8	5
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	7	4
Illinois	32	....	....	5	37	....	....	....	8	8	45	56	1,962	1,757
Indiana	1	....	....	....	1	....	....	....	3	3	4	6	338	276
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Kansas	9	....	....	4	13	2	....	1	9	10	25	35	1,662	1,673
Kentucky	5	....	....	2	7	....	1	....	1	2	9	15	732	407
Louisiana	7	2	....	5	14	....	....	....	1	1	15	20	758	637
North Louisiana	....	2	....	1	3	....	....	....	1	1	4	5	266	303
South Louisiana	7	....	....	4	11	....	....	....	....	....	11	15	492	334
Michigan	....	....	....	....	....	....	....	....	....	....	....	25	658	574
Mississippi	4	....	....	....	4	....	....	1	3	4	8	3	206	92
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	39	29
Montana	....	....	....	1	1	....	....	....	4	4	5	....	313	226
Nebraska	....	....	....	....	....	....	....	....	....	....	....	1	12	38
New Mexico	7	....	....	....	7	....	1	....	3	4	11	7	404	259
New York	15	....	10	....	25	....	....	....	....	....	25	25	1,211	1,191
Ohio	4	5	....	8	17	....	....	....	....	....	17	11	820	723
Oklahoma	21	2	1	7	31	2	1	....	5	6	39	46	1,832	1,404
Pennsylvania	27	7	15	1	50	....	....	....	....	....	50	49	2,775	2,436
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	9	6
Texas	68	8	....	24	100	1	5	1	22	28	129	139	5,948	4,141
E.Tex.Bor. Co.'s	....	....	....	....	....	....	....	....	1	1	1	1	33	18
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	3	5
Rest of E. Texas	3	....	....	....	3	....	1	....	....	1	4	9	274	241
North Texas	11	....	....	6	17	....	1	....	3	4	21	31	1,347	1,044
W. Central Tex.	3	....	....	3	6	....	....	....	3	3	9	8	410	374
West Texas	26	....	....	2	28	1	....	....	2	2	31	44	1,580	921
Tex. Panhandle	1	3	....	1	5	....	....	....	....	....	5	9	274	191
G. Coast, Upper	6	3	....	2	11	....	3	....	4	7	18	11	588	319
G. Coast, Lower	13	2	....	6	21	....	....	1	2	3	24	18	892	611
Southwest Texas	4	....	....	4	8	....	....	....	5	5	13	5	441	354
S. Central Tex.	1	....	....	....	1	....	....	....	2	2	3	3	106	63
Utah	....	....	....	....	....	....	....	....	....	....	....	....	1	....
West Virginia	2	11	....	3	16	....	....	....	....	....	16	24	916	673
Wyoming	4	....	....	....	4	....	....	....	2	2	6	....	161	118
Total U. S.	249	37	26	61	373	5	9	3	69	81	459	512	23,045	18,361

* Includes distillate wells. † Includes salt water disposal wells.

Kansas

Bad Weather Reflected in Diminished New Production

Bad weather slowed Kansas operators as evidenced by the small amount of new production reported, which included 3 completions totalling 166 barrels a day. Russell, Rice and Barton Counties got the new wells, none wildcat strikes. Operations totalled 311 compared with 353 for the same period last year and included 82 active wildcats compared with 77 for the same period last year.

Ellis County: Max Cohen's Madden 1, NWC NE 4-13s-17w, likely pool opener about 1¼ miles northwest of the Catherine pool, continues testing. With Arbuckle topped at 3582 feet and drilled to 3614 feet, total depth, the well filled up with 2400 feet of oil. Two miles northeast of the Solomon pool, Bridgeport Oil Company's Sessin 1-B, SE SW SE 15-11s-19w, swabbed 9 barrels of 22-gravity oil an hour after acidizing Arbuckle at 3453-74 feet, to open a new area.

Rice County: Nelson Drilling Company completed Allison 1, NE NE NE 23-19s-6w, to open a new pool northwest of the Smyres field. The wildcat was standing with 1300 feet of oil after testing at 3339-84 feet in Mississippi chat and awaited pumping unit.

Barber County: Lion Oil Refining Company's Alien 1, NE NE NE 2-30s-14w, southwest of the Coats pool, Pratt County, flowed about 2 barrels of oil an hour after acidizing at 4509-13 feet in the upper part of the Arbuckle lime. Testing has been under way for some weeks and the well now has indications of having opened a new area. Champlin Refining Company is re-working Oldfather 1, C NE 18-31s-14w, a Skinner Northwest pool test which was abandoned several weeks ago. Operator plans to test several horizons between 3792 and 4462 feet, total depth.

Saline County: Mouser Oil Company is testing oil show in Viola lime at Carlin 1, NE SE SW 13-15s-3w, 4 miles southwest of the Salina pool. With Arbuckle topped at 3475 feet and pipe set at 3505 feet, casing was perforated with 18 shots at 3258-64 feet and well swabbed 15 barrels of oil and 37 barrels of water in the first 24 hours.

Stafford County: Harber & Swearer's Smith 1, SWC 19-21s-11w, wildcat 2 miles southwest of Snider South pool, topped Arbuckle at 3548 feet, set pipe at 3550 feet and after drilling to 3556 feet, total depth, acidized with 2500 gallons and swabbed 5 barrels of oil an hour after a 1300-foot oil fill up. Testing continues.

Rocky Mountain Area

Clarks Fork Structure Wildcat Is Productive

Montana wildcat test productive; Stanolind abandons two wildcat tests in Colorado and one in Montana.

Clarks Fork: General Petroleum Corporation's Peters 1, C NW NW of 25-9s-22e, wildcat on the Clarks Fork structure, northwest of the Elk Basin field in Carbon County, Montana, gives indication of making a producer in the second Frontier sand, which was topped at 6450 feet, with total depth 6531 feet. The 7-inch production string was cemented at 6448 feet with 110 sacks and 2⅞-inch tubing run to 6518 feet. The well began flowing when swab was pulled. On 1-hour flow test, it produced 4½ barrels of 43-gravity oil. The well is estimated good for approximately 200 barrels per day.

Bell Rock: Stanolind Oil & Gas Company's Hanawalt, NE NE SE 4-6n-92w, wildcat test in Moffat County, northwestern Colorado, has been abandoned in the basal Sundance at 9084 feet. Top of the Sundance was logged at 8848 feet.

McElmo: Stanolind's Schmidt 1, C SW NW 25-36n-18w, Pennsylvanian test of the McElmo structure, Montezuma County, Colorado, was abandoned after drilling to 7046 feet without encountering showings.

McLeod: Stanolind's Rostad 1-M, C NE NW NE 16-2s-13e, has been abandoned at 2992 feet. Operators had considerable difficulty with loss of circulation. A water sand, believed to be Tensleep, was logged at 2764-2869 feet.

Shawnee: Dickey Oil Company's Government 1, NE NE SW of 27-32n-69w, deep test of the Shawnee field, Converse County, Wyoming, drilled 24 feet into the Converse sand to 4849 feet and was abandoned. The Minnekahta, top at 4720 feet, and the Converse, top at 4825 feet, were barren. The Dakota and Lakota sands were water bearing.

North Big Hollow: Wasatch Refining Company is moving in rotary tools for a Tensleep test of the North Big Hollow structure, Albany County, Wyoming, at a location in C SE NW 7-15n-75w. The North Big Hollow structure was recently proved for oil in the Muddy sand at 827-848 feet in a well drilled by Oklahoma Oil Company in C NE NW of 7-15n-75w, which swabbed 6 barrels of 22-gravity oil per hour.

New Mexico

Lea Wildcat Produces from Single Deep Pay Logged

Continental Oil Company et al's Skaggs 2-B-23, Lea County wildcat between the Monument and Skaggs fields, confirmed production for the single deep pay logged in drilling to granite at 10,430 feet without encountering Ellenburger. It swabbed 12 barrels of oil and 60 barrels of water on 6-hour test. Production is from perforations at 7695-7750 feet in Basal Permian, and more favorable oil yield is anticipated after the rotary fluid is removed from the formation.

Phillips Petroleum Company's Lea-Mex 4, 1¼ miles north by west of Easterly production in the Maljamar field, was drilling lime at 8130 feet, and may continue to the Ordovician, which has not been explored in western Lea County or Eddy County. The Texas Company's State 1-A-G, 2½ miles north of the northwest Vacuum area, was drilling lime at 6715 feet.

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NEAL T. DILDAY has resigned as draftsman with the Oklahoma Geological Survey to join Superior Oil Company of California at Oklahoma City.

West Texas

Western Ector Wildcat May Make Oil Producer

The Texas Company's T. P. Land Trust 1-B, western Ector County wildcat and 3¾ miles east by south of the Wheeler-Ellenburger field, promises to make an oil producer for a temporary completion in the Mississippian on the eve of lease expiration. A 4-hour drill stem test at 7711-7914 feet showed evidence of the well making a head before packer slipped, but the drill pipe yielded 4141 feet of gas-cut mud with about 20 gallons of free oil on top. A second drill stem test with double packer was scheduled to try for a flowing well prior to lease expiration December 16. This wildcat entered the Wolf Camp at 7610 feet and top of Mississippian shale at 7893 feet, establishing a higher structural position and comparable section with nearest Wheeler-Ellenburger field wells, but is much lower than a prospect to the northwest.

Shell Oil Company and Cities Service Oil Company's T. P. Land Trust 1, which brought on the activity in western Ector County by indicating probable production in 3 zones before encountering prolific head of water in the Ellenburger, was testing a small amount of oil and acid residue from Devonian perforations at 8120-50 feet. This zone and the 8800-foot Silurian previously indicated natural flow of oil through tester. The Devonian was entered at 7860 feet with most effective pay between 7889-7936 feet, which is to be tested next.

Stanolind Oil & Gas Company's Midland Farms 1-L, C SE SW Sec. 36, Block 41, T-1-N, northern Ector County wildcat and 5¾ miles southeast of its Midland Farms pool, Andrews County, cemented 5½-inch on top of San Andres saturation at 4843 feet after drill stem test at 4853-4905 feet returned 420 feet of oil-cut mud and 360 feet of salty water. This wildcat entered the Grayburg at 4580 feet with elevation of 2981 feet, and was considered eliminated after testing sulphur water at 4754-82 feet.

Prospects: Humble Oil & Refining Company's Parrott 1, eastern Upton County, reperforated opposite Clear Fork at 7370-7440, 7480-7500 and 7530-75 feet, then used 1000 gallons of acid in latter 2 zones. A substantial increase in oil was indicated while swabbing down to test. This wildcat previously showed a small volume of 35.5-gravity oil from original perforations at 7250-7310 feet.

In Hockley County, The Texas Company's Montgomery 1, 7 miles north of the Slaughter field, was repairing cable tool rig in lime at 4883 feet after logging additional pay at 4823-32 feet that tested 11 barrels oil in 6 hours on bailing test. Honolulu Oil Corporation's Hudson 1-9, 3¼ miles southwest of the Slaughter field, filled 2100 feet with oil and 400 feet with water after plugging back to 5127 feet, with top of San Andres saturation at 5070 feet.

Leland Fikes and John Murchison's Alexander 1, Terry County, is installing pumping unit after indicating commercial production following treatment with 3000 gallons of acid in San Andres at 5109-5157 feet.

Pecos County: Phillips Petroleum

Company's Ada Price 1, wildcat that temporarily held the world depth record at 15,279 feet in Ellenburger, has succeeded in drilling by tubing to 11,660 feet, and will test through perforations at 11,495-525 feet opposite gas show passed up. Magnolia Petroleum Company's Hart-State 1, 2 miles southwest of the Abell field and a failure in the Ellenburger at 6465-6754 feet, has plugged back to 6100 feet to set 5½-inch casing and test saturation in the Waddell, of Basal Simpson.

Andrews County: Mid-Continent Petroleum Corporation's University 1-11, 1850 feet southwest of its prolific Devonian discovery for the Fullerton structure, halted at 8648 feet to set pipe after flowing at maximum rate of 111 barrels hourly when tester was used in Devonian, topped at 8408 feet with first saturation at 8412 feet.

Winkler County: Sun Oil Company's Keystone 2, 2 miles north by west of the Keystone-Ellenburger field, tested sulphur water with 540 feet of gas-cut mud at 10,336-10,396 feet, and will set pipe on bottom to try for completion. The Waddell and Silurian zones are promising sources of production. Continental Oil Company's Walton 1-D, ¼-mile west of Ellenburger production, was drilling shaley-lime at 9995 feet in Simpson, being 837 feet low. Stanolind-Shell's Wheeler 1-C, ¾-mile northwest extension for the Wheeler-Ellenburger field, flowed 425 barrels of 45-gravity oil initial through 24/64-inch choke from Ellenburger perforations at 10,578-10,618 feet.

15 Kansas Wildcats Staked In Unusual Drilling Flurry

Kansas operators staked 15 wildcats out of a total of 33 new locations during a week of unusual drilling flurry. Three wildcats each were staked in Stafford, Barton and McPherson Counties. Barton leads the state with 5 other operations in progress. Rice, Russell, Saline, Sedgwick, Graham and Cowley Counties got one wildcat location apiece.

Kansas reported 27 completions in a week, including 7 oilers, a gas well, 17 dry holes and 2 abandoned locations. Completions included 11 wildcat failures.

Humble Changes

Humble Oil & Refining Company, Houston, announces the following promotions and changes in supervisory forces of the production department: John S. Boldrick has been promoted to division petroleum engineer of the Louisiana Division, New Orleans; William E. Kirkham has been promoted to district chief clerk of the Talco District, Talco, Texas; and Robert E. Kilpatrick, district petroleum engineer has been transferred from the Raccoon Bend District, Bellville, Texas, to the Katy District, Katy, Texas.

Oklahoma Abandonments

Fifty-seven exhausted oil and gas wells were abandoned in Oklahoma between October 26 and November 11, including 30 in the east ranges and 27 in the west ranges. At the same time, 31 wildcat wells were failures. Of these, 19 were in the east ranges and 12 in the west ranges.

Central West Texas

Western Jones County Test Showing for Discovery

The Texas Company's McCright 1, Stephen Scallorn Survey, is showing for a western Jones County discovery with 700 pounds pressure on casing after drilling plugs from casing set after plugging back from 3210 feet to 2555 feet. Production test has been delayed while changing from rotary to cable tools, and is from lime at 2532-55 feet in the Noodle Creek zone, topped at 2517 feet with elevation of 1892 feet.

M. M. Travis et al's Nobles 2, B. Travino Survey 190, and offsetting a 5156-foot Ellenburger failure, filled 600 feet with oil from the Flippen at 1934-48 feet, having plugged back from 2175 feet. Acid treatment is scheduled.

Stephens County: Mudge Oil Company's Adams 1, nwc of S½ TE&L Co. Survey, was deepening after showing oil and water after using 500 gallons of acid in lime at 4117-18 feet. This thin pay zone filled 500 feet with oil in 12 hours when drilled, and similar experience was had with Bend saturation at 3418-22 feet. Gulf Oil Corporation's T. P. Land Trust 6, east offset to a prolific Mississippian discovery in the Atkins area, proved dry in this zone, and tested water in Ellenburger at 4760 feet. Completion try will be made in the Bend at 3245-75 feet.

North Texas

King County Test Confirms Favorable Drill Stem Show

Ohio Oil Company's Eastern King County wildcat on its W. R. Ross 6193-acre lease, Section 24, R. B. Masterson Survey, confirmed favorable drill-stem showing in flowing 305 barrels of 36.4-gravity oil natural, with gas-oil ratio 800/1, on 4-hour gauge through ½-inch tubing choke.

The well flowed 66 barrels the first hour and increased to 82½ barrels the last hour with working pressures on tubing dropping from 360 to 200 and on casing from 460 to 320 pounds.

This production is from Strawn lime at 5257 feet with 5½-inch casing cemented on top of saturation at 5236 feet. Ross 1 is 9 miles east by south of the Bateman field, which has 4 flowing and pumping wells from the same zone and approximate depth, and 3 wells in the 3600-foot lime. Anderson-Prichard Oil Corporation is the only outside participant, having checkerboard acreage within the discovery block. Humble Pipe Line Company will enter the area with a lateral from its Bateman-Panhandle unit.

Cooke County: The Texas Company's Beasley 1, J. McKerley Survey and ⅞-mile southwest of the company's Sivels Bend 6700-foot Strawn discovery, logged saturation in sand at 6435-41 feet, and was drilling at 6425 feet. The Texas Company's Gainesville National Bank 1, Block 7, T. W. Ward Survey, and a mile northwest of the Walnut Bend field, flowed 221 barrels of oil natural on 16-hour official gauge through tubing choke with working pressure on tubing dropping from 200 to 50 pounds. Production is from Ellenburger at 5373-5485 feet, having plugged back from 5727 feet. It is 86 feet high to an Ellenburger failure that separates the discovery from the field. Maguire Industries, Inc.'s Hoenig 1, J. C. Morgan Survey and 2⅛ miles west of the Voth field, was abandoned at 3510 feet in Ellenburger, topped at 3332 feet. Another test is likely for the area, as Hoenig 1 passed up oil saturation in sand at 1400-06 feet.

Clay County: Anderson-Prichard Oil Corporation's Wood 1-A, MEP&P Ry. Section 12, 4 miles southwest of the Petrolia shallow field, was showing oil and gas while unloading to test initial perforations at 5935-50 feet opposite conglomerate saturation in the Bend, topped at 5879 feet by electrical log. This wildcat showed favorable for production through tester at 5945 feet, and was carried to barren Ellenburger at 6506-6672 feet before landing pipe. Continental Oil Company's Morris 1, W. C. Davis Survey and a mile south by east of the West Ross 5400-foot Bend discovery, entered Ellenburger at 5752 feet, and halted at 5870 feet to set pipe at 5825 feet and perforate with oil prospects from Strawn sand at 4763-87 feet.

Archer County: Phillips Petroleum Company's Bullington 1, Browning sector of the Vogtsberger field, was drilling shale and shells at 7875 feet, and is believed to have drilled through the Ellenburger, topped at 5233 feet. It has established a record for the state on Ellenburger thickness. George W. Cooper et al's Daume 1, SW SW SE S.P. Ry. Sec. 1, A-422, between the Cooper and Holliday deep areas, flowed 100 barrels oil the first hour after drilling plugs from 7-inch casing at 4068 feet, while bottomed at 4077 feet in Strawn sand.

Wilbarger County: The Texas Company's Pigg 1, ⅝-mile west of the Odell field's discovery, swabbed and flowed 198 barrels oil and 22 barrels water daily from Palo Pinto (Canyon) at 4843 feet. The area has 3 producers and 4 active tests. Big Six Oil Company's Schlaffke-Morris 1-A, prospective deep oil discovery for the Harrold pool, cemented 5½-inch pipe on bottom at 5146 feet, and will perforate opposite saturation in Ellenburger, topped at 4946 feet by corrected log. Johnny Fidel et al's Shelby 1, 1⅛ miles east of the field, abandoned in shale at 5618 feet without decisive test of oil shows above the Mississippian, topped at 5410 feet.

Throckmorton County: James Stewart & Company, Inc.'s Tharp 1, SEc TE&L Co. Sec. 3007 and 2 miles northwest of the Ewalt pool's 4100-foot Bend discovery, recovered 30 feet of free oil and 40 feet of oil-cut mud when tester was used in Bend at 4250-60 feet. It will be deepened to the 4700-foot Mississippian before running pipe to try for completion.

Kansas Spacing Order

PAW has authorized 20-acre well spacing in the Kramer-Stern pool of Butler County, Kansas, this being the fourth producing area in the state to be given spacing relief in the last 3 weeks. The order stipulates that each well be located within 30 feet of the center of the southeast quarter of a quarter-quarter section or within 30 feet of the center of the northwest quarter of a quarter-quarter section. The order does not apply to wells drilled deeper than 3200 feet.

East Texas

Van Zandt Wildcats Show For Commercial Producers

Two Van Zandt County wildcats are showing for commercial producers in the Basal Trinity series, while the confirmation test for the county's Fruitvale deep area is more productive than the discovery.

Humble Oil & Refining Company's B. W. Bruce, Jr., 1, J. Saligna Survey and 4 miles south of Edgewood, flowed 35.2-gravity oil by heads between swabbing tests, although considerable rotary fluid remains in the hole. Production is from perforations at 8524-44 feet in Travis Peak, topped at 8500 feet.

The Texas Company's Stout 1, N. T. Dickerson Survey and 2500 feet north by west of its recent Travis Peak failure, flowed 5 barrels of 44-gravity oil hourly with gas-oil ratio of 2500/1 on 7-hour natural test through 9/64-inch choke from Lower Rodessa at 8150-61 feet.

Magnolia Petroleum Company's Phillips 1, 1300 feet north by west of the Fruitvale discovery pumper, swabbed 50 barrels of oil on 6-hour test from perforations in Travis Peak at 8594-8626 feet, and will reperforate at the same level.

Wood County: Bobby Manziel et al's Evans 1, J. Stark Survey and 2 miles east of Quitman, pumped and flowed 130 barrels of 19-gravity black oil on 48-hour test from perforations at 4860-4905 and 4914-44 feet in sub-Clarksville, topped at 4850 feet. Other fields in the county produce from the Paluxy and Lower Trinity series.

Hopkins County: Onyx Refining Company and Hollandsworth Drilling Company's Cundill 1, Simon Derrick Survey and in the Peerless area, was scheduled to be abandoned at 4817 feet, having entered the Georgetown at 4544 feet and Paluxy at 4783 feet. The Paluxy was faulted.

Houston County: Sun Oil Company's Dailey 3, 1932 feet northeast of a big gasser, flowed 130 barrels of oil on 6-hour test through ¼-inch choke from Woodbine perforations at 5860-63 feet to become one of the largest producers in the Navarro Crossing field.

Henderson County: Lone Star Producing Company's Lee 1, Athens prospect, found the Travis Peak barren in drilling to 9170 feet, and will continue to water before plugging back to try for completion in comparatively thin Rodessa saturation.

The Texas Company's Morse 1, Chandler area, logged Massive anhydrite at 9082-9328 feet, and was coring shaley-lime at 9405 feet. Gulf Oil Corporation's Frizzell 1, Baxter prospect, was drilling shale at 7795 feet.

Titus County: Humble Oil & Refining Company's Searcy 1, Mount Pleasant Smackover project, was nearing base of the Cotton Valley in drilling at 10,450 feet.

Production, Withdrawals In Oklahoma Authorized

The Oklahoma Corporation Commission authorized production of 207,900,000 cubic feet of gas per day from the Hugoton gas pool in Texas County during January and fixed daily withdrawals from the West Medrano pool and the Lower Charlson zone of the Chickasha pools at 23,626,000 and 94,355,000 cubic feet of gas daily, respectively. The commission also established potentials for all wells in the Wilcox zone of the Oklahoma City pool for the period from January 1 to July 1, 1945. The order provides that wells except those producing 25 barrels or less per day shall have potentials established by declining their last official potential one-half of one per cent per month, said decline to apply from the effective date of the last official potential.

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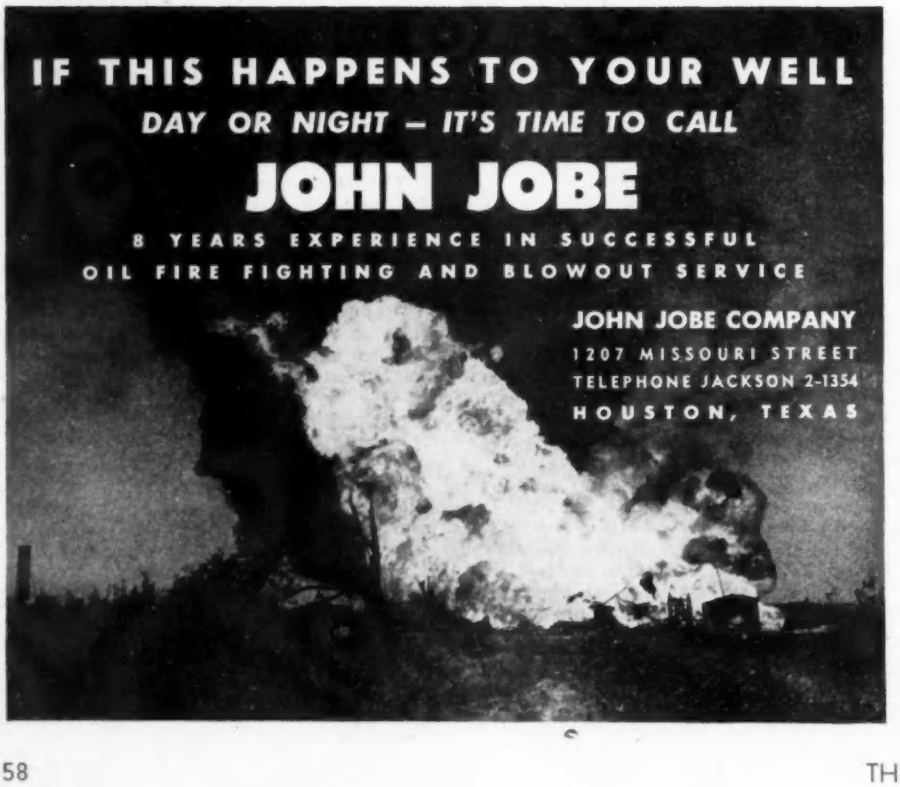
T. J. SLAVIK, formerly with Gulf Oil Corporation, Tulsa has resigned to become general production manager for George W. Strake, oil operator of Houston.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Southwest Texas

Shallow Sand Is Opened In West Sinton Field

Tide Water Associated Oil Company has opened a shallow sand in the West Sinton field, San Patricio County, completing P. E. Dyer 1 through perforations at 1046-52 feet. On 24-hour gauge through 12/64-inch choke it flowed 37¼ barrels of oil and a like amount of water with tubing pressure 125 pounds and casing pressure 300. Gas-oil ratio was 506/1. The discovery well, ¼ mile northwest of this shallow producer, produced from 3400 feet.

Stanolind Oil & Gas Company's Welder Ranch 2, wildcat in the Calallen area, is drilling below 6470 feet in hard shale.

Brooks County: Humble Oil & Refining Company's Dan Sullivan 1, wildcat in the area 8 miles southeast of Falfurrias in the M. D. Floyd Survey, is running a string of 9⅝-inch casing with depth 7117 feet, and probably will drill deeper. It may come back later for production tests of several sand sections just above present depth, where it showed recovery of distillate on drill stem tests.

In the Alta Mess field, Standard Oil Company of Texas' Mestena A-24, is completing in open hole at 2947-3000 feet. This well was originally abandoned after having been drilled as a relief well for the Number 24 blowout, but has gone in for completion.

Jim Wells County: Sun Oil Company has made location for Canales W-6, on a 3000-acre lease in the Seeligson field, to be drilled as a shallow well to relieve high gas pressure on shallow sands.

H. H. Howell has made location for L. E. Anderson 1, wildcat 7 miles southeast of Alice in the Los Presnos Grant. It will be within ½ mile of Humble's dry hole on the San Antonio Joint Stock Land Bank tract and will drill to 6000 feet.

Hidalgo County: Sinclair Prairie Oil Company is preparing to drill a rank wildcat 2 miles west of Edinburg. The well, Grade Callaway 1, will be located in Section 276, Texas-Mexican Railway Company Survey, and is projected to 9000 feet.

Kenedy County: Humble's Charles M. Armstrong 2, wildcat 1¼ miles east of Armstrong, is drilling below 10,625 feet in shale.

Oklahoman Buys Gas Well, Finds It Producing Oil

F. C. Hall, independent operator and drilling contractor of Oklahoma City, paid $25,000 for a gas well in Seminole County, but when he connected it to the gathering line he found that his well, besides making about 1,000,000 cubic feet of gas, was also flowing approximately 40 barrels of oil daily.

The well is Mathis 1, NW NW NE 7-6n-6e, north of the Grayson pool. Originally drilled by Vickers Petroleum Company and completed in the Earlsboro sand, it gauged an estimated 9,000,000 cubic feet of gas at plugged-back depth of 2890 feet. It awaited pipe line connection and was later acquired by the Oklahoma City operator. Hall has started a well 800 feet southeast of the producer.

Texas Gulf Coast

Production Test Planned For Addicks Area Wildcat

The Texas Company is preparing to make a production test in Mrs. Madge Hopkins 1, wildcat in the Addicks area, west of Houston in Harris County. After drilling to 8014 feet and running electric log, a string of 5½-inch casing was set to 7761 feet. Perforations were made at 7712-14 feet and squeezed to isolate the lower part of the hole, and another set will be made for the production test. The sand was reportedly carrying shows of oil.

In the Alief area, also west of Houston, Cities Service Oil Company has made location for F. R. Lummis 1, projected 9000-foot test on a 153.89-acre lease in the George Bellows Survey, ½ mile easterly from Cities Service Oil Company's Witcher 1, previously drilled.

General Crude Oil Company has abandoned J. Henry Cheek 1, on the west flank of the Joyce Richardson field, after drilling to 7623 feet in the sidetracked hole.

In the northeast part of the county, Sun Oil Company's Swilley et al 1, 5 miles southwest of Crosby, is drilling below 3800 feet in shale and lime.

Chambers County: Humble Oil & Refining Company has made location for a test in the Smith Point wildcat area east of the Smith Point field, its M. E. Mayes 3, 1320 feet north of Mayes 1. It is scheduled to 8500 feet. The company's Mayes 1 plugged back to 8421 feet from 9994 feet and perforated casing at 8189-94 feet.

Sun Oil Company's Rosa Arens 1, North Winnie area, is perforating at 9840-90 feet for a new test after having shown gas and salt water when tested through perforations at 9990-10,010 feet.

Montgomery County: George W. Strake's P. G. Krohn W-1, Wilcox test in the Conroe field, is circulating conditioning mud with total depth 11,530 feet. Only slight gas showings in thin sand streaks have been found below 10,000 feet.

Stanolind Oil & Gas Company's H. M. McMahan 1, east of production in the Lake Creek field, is drilling below 3400 feet in shale and lime after drilling out from under 2975 feet of surface casing.

Oklahoma Lands Leased

Oil and gas leases on four 80-acre tracts of Oklahoma school lands north of Loyal in Kingfisher County were leased to the Magnolia Petroleum Company for a bonus of $14,432. The leases included the E½ NW; W½ NW; E½ SW and W½ SW of 16-18n-9w.

On the west flank of the St. Louis pool in Pottawatomie County, Russell B. Patterson leased 5 tracts for $1400 bonus and a well, all located in 36-7n-3e.

20-Acre Spacing Announced

C. C. Brown, director of production for District 2, PAW, announced 20-acre well spacing for Cheyarka pool in Seminole County, East Pauls Valley pool in Garvin County, and the Southwest Lone Grove pool in Carter County, Oklahoma. In Cheyarka restrictions are relaxed for drilling through the Booch sand with locations spotted within 30 feet of the center of northwest quarter of the quarter-quarter section, or within 30 feet of the center of southeast of the quarter-quarter section.

For the Southwest Lone Grove pool, wells may be drilled in the northwest corner or the southwest corner of the quarter-quarter section, each well to be at least 800 feet from other drilling or producing wells and applying only to the Pennsylvania sand horizons.

In the East Pauls Valley pool wells may be drilled in the northeast or southwest of the quarter section and 800 feet from other producing wells. The order also provides that not more than 2 wells, including all drilling or producible wells spudded prior to the date of the amendment (November 27), shall be drilled on any quarter-quarter section.

South Louisiana

Second Tepetate Field Producer to Be Brought in

Barnsdall Oil Company is preparing to bring in a second well in the West Tepetate field it recently opened in Jefferson Davis Parish. The Minos Miller 2 had drilled to 9407 feet and set 7-inch casing at 9220 feet and is now running tubing, preparing to perforate for completion. On a drill stem test at 8380-8400 feet, taken before setting casing, it recovered 37.4-gravity oil.

Barnsdall et al's Joe Fuselier 2, northeast offset to the discovery well in this

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1—13⅝" Cameron, 3000-Lb. Test, Manual Operated, 4½" Rams 750.00
2—7" Cameron Manual Operated Tubing Preventers, 2" and 2½" Rams 475.00
1—7" Regan Tubing Preventer, new, with hydraulic pump 475.00

STEAM ENGINES

2—Oilwell 12 x 12 Vertical Steam Drilling Engines, Piston Type Complete. Can be used for direct drive on rotaries.
1—12 x 12 Ideal—Ajax Steam Drilling Engines, Piston Type, Water Trap. Complete with throttle valves, skids and all connections.
4—11 x 11 Gumbo-Buster Semi-Enclosed Drilling Engines on steel skids. Ideal for coring unit $275.00

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2—Wilson-Snyder 14 x 7¾ x 18 with Abercrombie Steel Ends. Mounted or separate, each $1750.00
1—Wilson-Snyder 14 x 7¾ x 18 Pumps, side suction, excellent condition. Late model, each 1650.00
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area, is drilling below 8290 feet after running electric log.

Union Sulphur Company's Wait 1, outpost on the southeast flank of the Iowa field, is still rigging up.

Acadia Parish: Sun Oil Company's Sensat Pool 1, Egan field outpost, northeast of production, is still testing in perforations at 10,770-785 feet, but may make a good producer despite a little water now. It was flowing through ⅛-inch choke and making 214 barrels of oil daily with tubing pressure 1400 pounds. Depth is 10,795 feet, with casing on bottom.

Sun Oil Company's Estherwood Townsite 1, wildcat in 50-10s-1w, is drilling below 10,295 feet in shale. No showings have been reported and the well is within 700 feet of proposed depth.

In the Church Point area, Continental Oil Company's Mrs. L. D. Thibodeaux 1, wildcat in 73-7s-2e, is drilling below 9656 feet in shale.

Iberville Parish: New producers have been completed in the Rosedale and in the Bayou Blue fields, and Shell Oil Company has abandoned a deep test in the White Castle field. At Rosedale, Sugarfield Oil Company's Wilbert 2 was brought in from perforations at 10,007-011 feet, flowing 229 barrels of 34-gravity oil daily through ⅛-inch choke with tubing pressure 1540 pounds and gas-oil ratio 1052-1. Total depth is 10,304 feet.

T. G. Markley & Crosby Drilling Company's Baist Cooperage Company 9, in the Bayou Blue field, is flowing 292 barrels of 34.8-gravity oil daily from perforations at 7400-04 feet, with tubing pressure 1100 pounds and casing pressure 1650. It was drilled to 7532 feet and set casing at 7500 feet.

In the Bayou des Glaise field, Humble Oil & Refining Company's Wilberts C-1 is drilling below 9382 feet in shale.

Vermilion Parish: The Texas Company's Frank LeBouef 1, wildcat on the South Abbeville prospect in 32-12s-3e, has set 10¾-inch surface casing at 1960 feet. It is now drilling on 12,000-foot contract.

The Pure Oil Company's Ferguson-Benoit Unit 2, on the southeast flank of the West Gueydan dome, is coring below 9670 feet for the sand producing in the first well on this lease, which opened production in the area.

In the West White Lake area, Union Oil Company of California's State-White Lake B-1 has cleaned up a fishing job after reperforating at 11,835-845 feet, and is preparing to make another test. It tested oil from 11,820-830 feet, but flowed only a small volume and was killed.

St. Charles Parish: Gulf Refining Company's Delta Securities Company 14, in the Bayou Couba area, was preparing to run a production test at 10,533 feet. It was drilling plugs from the casing set at 10,530 feet at latest report.

Humble Oil & Refining Company's Sarpy Brothers 1, Good Hope area, is standing cemented at 3345 feet after running 13⅜-inch surface casing to 3092 feet. Apparently it plans to drill ahead much deeper than the 7800-foot pay producing in the two Pure wells in the area.

St. Martin Parish: Stanolind Oil & Gas Company's Iowa St. Martin Land Company 1, on the Hager-Martin dome, is at 10,983 feet, where it has run electric log.

In the same area Gulf Refining Company's Iowa-St. Martin D-2, is drilling below 10,850 feet.

North Louisiana

Richland Parish's First Oil Field Officially Opened

Richland Parish's first oil field officially opened; Catahoula Parish well to test Massive Tuscaloosa; Concordia Parish outpost prepares for production tests; Lisbon field Bodcaw test planned.

Richland Parish's first oil field was officially opened with Charles H. Murphy, Jr.'s J. E. Holt 1 making 81½ barrels of pipe line oil in 10 hours through a 12/64-inch choke. Tubing pressure was 610 pounds, gas-oil ratio 440 to 1, and gravity 38.1, corrected. Casing was perforated with 22 holes at 3280-90 feet in the Tuscaloosa sand and the well started flowing after swabbing a short time. The discovery is near the town of Delhi, and has started a brisk lease and royalty play extending toward the Mississippi river.

Catahoula Parish: The California Company is reported to have set casing at 8578 feet in Tensas Delta Monaghan Land Company 1, 12-9n-7e, eastern part of the parish, to test a showing in the Massive Tuscaloosa sand, shown at 8512-73 feet on electric log. On a drill stem test at 8504-77 feet it reported recovery of gas-cut mud and water with a blow of gas. However, operators ordered casing run and tanks built. This well was drilled to 6000 feet several years ago, after which it was taken over by Continental Oil Company and carried to 9215 feet and abandoned. The first operator has now gone in to test the Massive section.

Concordia Parish: The Carter Oil Company's George Murray 1, outpost 2½ miles south of production in the Lake St. John field, has set casing for production tests after drilling to 9153 feet. It reportedly recovered 26 feet of sand showing oil in the Massive Tuscaloosa section, slightly streaked with shale, and casing was run to 9149 feet. Core at 9086-9101 feet recovered 11 feet of saturated sand, and other sand was cored below this. Although 2½ miles from production, and ordinarily classed as a wildcat, operators believe it is still on structure with the Lake St. John field, and would be a long extension if productive, instead of a field discovery.

Morehouse Parish: The Texas Company's Susie R. Kennedy 1, wildcat in 32-22n-6e, has been shut down at 6337 feet in hard lime, waiting for fuel.

Claiborne Parish: Ohio Oil Company's G. W. Taylor P-1, which has proved production in the Cotton Valley and a new pay for the Haynesville field, has plugged back to 9041 feet and is testing again. It leaves perforations open from 8910-20 feet and 8835-75 feet for this test to determine how the flow will be affected after closing off the bottom perforations. With all perforations open from 11,025 feet up, it had produced 141.28 barrels in 24 hours through an 8/64-inch choke.

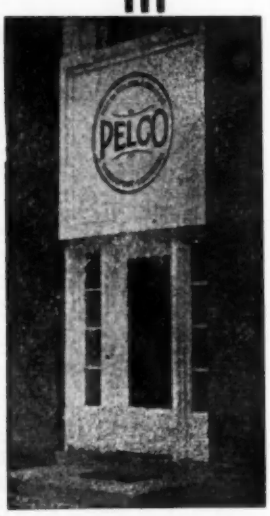
Big West Drilling Company will drill C. B. Tanner 1 as a 9300-foot Bodcaw test in the Lisbon field. Location will be in the east half of 11-21n-4w.

☆

JOHN H. JENNINGS, has opened consulting engineering offices in the Philtower Building, Tulsa. He formerly was with Ohio Oil Company, Bakersfield, California.

Relax, Please!

The other night we saw a movie. Right off the bat a big, good-natured guy on the screen says he thinks there is not enough kindness in the world. Well, just a few reels and two sacks of popcorn later, this same guy who seemed so good-natured bumps off a nice looking chap with curly hair and steals his roll. All of which goes to prove you never can tell. At least about picture shows. Well, relax! As the fellows all know who TRY PELCO FIRST, that friendly atmosphere around here is on the up-and-up.



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Arkansas

Strong Area, Union County, Is Given New Oil Field

New field opened in Strong area; semi-wildcat to test Smackover; producer added in Dorcheat-Macedonia field; Ouachita wildcat resumes swabbing.

Root Petroleum Company has opened an oil field in the Strong area in Union County, with its Union Saw Mill Company 1, which had been regarded as a possible pool opener on basis of previous information, but which has been delayed in making final test, waiting for pumping equipment. Before installing pump it had swabbed 3 to 3½ barrels hourly, and on first pumping gauge it pumped 120 barrels in 24 hours.

Production is from Smackover lime with casing perforated at 6320-30 feet with 23 shots. Depth is 6380 feet, with the 5½-inch casing landed 10 feet off bottom. This is the first Smackover lime production in this area, the nearest producers from that formation being located in the Snow Hill field, 26 miles northwest, and in the Schuler field 33 miles east. Should this well continue to hold production at a good rate, it probably will stimulate deeper drilling.

Phillips Petroleum Company has abandoned Callie 1, wildcat 3 miles west of Strong townsite, Union County, after drilling to 5008 feet. It set casing and perforated at 4545-50 feet for a test which showed only a little oil and lots of salt water. It then tested salt water and gas at 4103-10 feet. Phillips may begin another test in the area which would be carried down to the Smackover.

Marine Oil Company is rigging up on McGough 1, semi-wildcat test a mile north of the Urbana field in 34-17s-13w, scheduled to the Smackover lime. Recently Marine abandoned its Thompson B-1, 2½ miles southeast of the McGough 1, after going to 6520 feet, a record for Urbana field. It found Cotton Valley at 4075 feet and Smackover at 6476 feet, but showed water in porosity at 6480 feet.

Columbia County: Shell Oil Company has added a producer in the Dorcheat-Macedonia field with W. P. Kieth 3, dually-completed in Cotton Valley at 7045-62 feet, and Smackover at 8848-65 feet. It flowed 600 barrels daily through a ¼-inch choke from Cotton Valley, and at the rate of 400 barrels daily through a ¼-inch choke from Smackover.

Root Petroleum Company's A. B. Gunnels 1, completed from 7363-86 feet in the Smackover lime at the Village field, indicates the newer and older portions of the field are one structure, and apparently have the same water level. On initial gauge it flowed 150 barrels of oil and 10 barrels of water daily through a ⅛-inch choke with tubing pressure 600 pounds. Casing was set at 7363 feet, and completion made in open hole.

Grady H. Vaughn has abandoned Jackson 1, wildcat near Waldo in the northwest part of the county, at 7560 feet after failure to find showings of oil or gas in drilling to the Smackover.

Miller County: Arkla Oil Company's R. T. Dodd 1, wildcat in the Bright Star area, is preparing to reperforate from 6330-50 feet for another test, after showing nothing but salt water on a test at 6260-90 feet after acidization.

Ouachita County: Grady H. Vaughn has resumed swabbing in J. F. Haltom 1 after being shut in for 6 weeks. This wildcat, in the southern portion of the county, swabbed at the rate of 40 barrels of heavy black oil daily from perforations at 2475-85 feet before being shut in, and is now recovering more of the same oil. Another point up the hole at 1905-55 feet is said to carry gas in the Nacatoch, but this has not been tested. It carried water in lower formations, including the Smackover at 6138-6264 feet.

Kansas Spacing Order

PAW has issued orders for 20-acre well spacing in the Jenday and Gypsum Creek pools in McPherson County, Kansas, and has amended a recent well spacing order affecting the Henne pool. The pattern for both pools calls for locations in the northeast quarter of a quarter-quarter section. The amended order for the Henne pool which was recently granted 20-acre well spacing eliminates the 3000-foot drilling depth and increases the footage between wells from 725 to 900 feet.

Texas Well Permits

Permits for drilling 159 new wells in Texas were approved by the Railroad Commission last week. There were 55 in West Texas, 36 in Southwest Texas, and 20 in the Gulf Coast.

North Texas reported 19 locations. There were 12 from West Central Texas, 10 from the Panhandle and 7 from East Central Texas.

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Southeastern

Jefferson Davis County, Mississippi, Has New Field

Developments in Mississippi include discovery of an oil field in Jefferson Davis County, setting casing in a 1-mile extension to the Gwinville field, and an important extension to the Cranfield producing area. Preparations are under way for a test in The Pure Oil Company's Adams County wildcat.

Jefferson Davis County: Gulf Refining Company's D. L. Mullins 1, 2½ miles southwest of the Sid Richardson Gwinville discovery gas and distillate producer, was brought in through casing perforations at 9224-34 feet, and at the end of initial test was making 18 barrels of 40-gravity oil hourly through ¼-inch choke, with tubing pressure 2750 pounds and gas-oil ratio 9000-1. The ratio is thought to be too high by the operators and the well has now been killed to cement with a squeeze job and make another set of perforations a little lower in the Massive sand. When first turned into the tanks it flowed 27 barrels in 2 hours through a 5/32-inch choke with ratio 6660-1. After changing to a ⅛-inch choke it flowed 45.9 barrels in 11 hours and ratio was up to 8992-1. It has definitely proved itself a good producer, but ratios were continuing to rise and operators decided to try to control them immediately. It is still possible the well is on the same structure with the Richardson well, although 2½ miles away.

A mile east of the Richardson well, The Superior Oil Company's Willie Durr 1, drilled to 9271 feet and has run 7-inch casing to 8304 feet which was scheduled to perforate about the end of the week. Apparently the well failed to find good showings in the Massive Tuscaloosa section, and will probably test the lower Eutaw or upper Tuscaloosa.

Adams County: The California Company's completion of its A. M. Ratcliff 1 is an important south extension to the Cranfield field, flowing 350 barrels of 40-gravity oil daily through a 5/32-inch choke from casing perforations at 10,325-353 feet. Structurally this well ran only 54 feet lower than the discovery well more than a mile north, indicating the axis of the field trends north and south, since wells to the northeast and northwest run considerably lower. The California Company has made location for Ratcliff 2 (Acct. 2) 1320 feet south of the recent extension, which may extend production toward acreage owned by companies other than the discovery operators.

The Pure Oil Company's McDowell 2, wildcat southwest of the Cranfield field, has set 5-inch liner below the previous casing string at about 10,300 feet, and extending to 10,385 feet, and probably will test a sand reported topped at 10,358 feet. It had drilled to 12,149 feet before stopping. Other sand had been cored previously at 10,273 feet, which may be tested later.

Humble Oil & Refining Company's Ida Stowers 1-A, another deep Adams County wildcat in the northern part of the county, is drilling below 11,750 feet. It reportedly picked up good gas showings at about 11,616 feet.

Lamar County: Gulf Refining Company is clearing location and moving in materials for J. M. Andrews 1, north offset to its discovery well in the Baxterville area, in the southwest corner of the county, and has made location for W. E. Davis 1, west offset to the discovery well.

In the northern part of the county, Sinclair Wyoming Oil Company's Newman Lumber Company 3, in 5-5n-16w, was drilling at 9292 feet, scheduled to 10,000 as a Tuscaloosa test.

Georgia

Only 3 wildcats are active in Georgia, although there are prospects for further development, with a number of the major companies owning lots of acreage in the state, and filling in blocks with additional leases.

In Wayne County, The California Company's Brunswick Peninsula 1, in Land Lot 7, was drilling below 3400 feet, preparing to start coring most of the formations.

Sun Oil Company's Doster-Ladson 1, new wildcat in Land Lot 71, District 7, Atkinson County, 35 miles west of Waycross, is still rigging up with Penrod Drilling Company as contractor. Interest is high in the area, which is a good geophysical prospect.

In Toombs County, 4½ miles southwest of Lyons, Tropic Oil Company is drilling a wildcat below 610 feet and setting casing for a possible test of gas showings at about 450 feet.

Florida

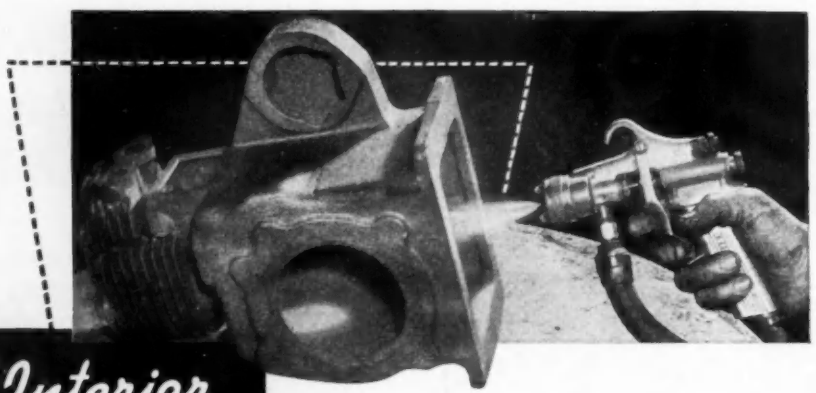
The Pure Oil Company is building roads to move in equipment to its C. C. Hopkins 2, wildcat in 21-6s-9e, Gulf County. The well is in the vicinity of Pure's Hopkins 1, recently abandoned at 8708 feet.

In Dade County, Humble Oil & Refining Company's State Internal Improvement Fund 1 is drilling below 9093 feet in anhydrite and dolomite.

Humble Oil & Refining Company is changing rigs on Gulf Coast Realties Company 4 with total depth 3405 feet before drilling. In this latest test in the Sunniland area, Humble's Gulf Coast Realties 3, also in Collier County, is waiting for derrick and rig after having completed roads.

Alabama

Plans of a wildcat in Clarke County, and starting of activity on other wild-



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cats highlight the developments in Alabama this week.

Clarke County: Angle & Angle, of Jackson, plans a Tuscaloosa wildcat in the northeast corner of 22-7n-4e, southeast part of the county, on a gravity meter prospect. The well is in an area where Humble Oil & Refining Company and The California Company hold acreage, and they probably will support drilling.

In 30-9n-3e, Bunte Oil Company et al's S. P. Chapman 1, another Tuscaloosa wildcat, is drilling after setting a string of surface casing at 360 feet.

Choctaw County: Hunt Oil Company's J. C. Bolinger 1, in 33-10n-3w, wildcat 6 miles southwest of production in the Gilberton field, is drilling ahead 2400 feet in shale with no showings. It is several hundred feet short of pay. Surface casing had been set at 170 feet.

Wilcox County: Southern Natural Gas Company's Fannie Stokes 1, in 32-12n-5e, scheduled to 6500 feet in the Pine Hill area, was drilling below 1600 feet.

Indian Lands Offered

Sealed bids for oil and gas leases on 2,996.05 acres of restricted lands of the Five Civilized Tribes will be received up to 10 a.m., January 9, at the office of the superintendent at Muskogee, Oklahoma. Counties in which leases are offered include Creek, Okmulgee, Okfuskee, Seminole, Pontotoc, Garvin, McClain, Carter, Love and Marshall.

Illinois Basin

Iola Pool Extension Is Completed in Cypress

Discovery near Bible Grove swabs 200 barrels on 24-hour test; Madison County has best Devonian producer in several weeks; Franklin County test makes producer; Iola pool extension completed.

Wisconsin Oil & Refining Company and Paul Doran's Murvin 1, NE SW NE 22-5n-7e, southeast of the Bible Grove pool, swabbed 200 barrels of oil in 24 hours while testing Cypress sand shot at 2505-10 feet.

The Texas Company's Cruse 1, SW NE NE 10-5n-5e, a north extension to the Iola pool, Clay County, has been completed in the Cypress sand at 2152 feet for 52 barrels of oil and four barrels of water in 24 hours on pump.

Richland County: The Texas Company's Wright 1, NE SW NW 24-4n-10e, a discovery in Preston township, flowed 264 barrels of oil in 24 hours from McClosky lime at 2464 feet after plug was drilled. Operators are testing. The well is approximately a mile east of production.

The Pure Oil Company and Ohio Oil Company's Koertge 1, NE NE NW 33-3n-10e, another Richland County discovery, pumped 98 barrels in 22 hours from McClosky lime at 3170-80 feet.

White County: W. J. Lewis et al's Burkhardt 1, SE NE SW 18-5s-9e, wildcat test 5 miles east of Carmi, filled with approximately 200 feet of oil per hour after plug was drilled for test of Cypress sand at 2835-50 feet. Operators have shut in for tank room.

Franklin County: Deep Rock Oil Corporation's Kirk 1, NE SE SE 15-7s-4e, opener of the North Thompsonville pool, pumped 120 barrels daily and a slight amount of water as operators completed the well.

Hamilton County: Sinclair Wyoming Oil Company's Russell 1, SW SE SW 17-7s-7e, swabbed and flowed 175 barrels in 24 hours after a 40-quart shot in the Aux Vases sand at 3130-50 feet. Six miles southwest of the Rural Hills pool, the well has been named discovery of the West End pool.

Jefferson County: The Texas Company's Inland Stell 1, SE SW SW 25-4s-1e, wildcat south of Waltonville, has been completed in Benoist sand at 2776 feet for 68 barrels of oil and 69 barrels of water on pump in 16 hours.

Wayne County: Gulf Refining Company's Mason-Anderson 1, NW NW NE 26-1s-5e, wildcat test, yielded 900 feet of gas, 120 feet of oil and 180 feet of oil-cut mud during a 1-hour drill-stem test.

Madison County: The Marine area was given a boost by Obering et al's Becker-I.C. Railroad 3, 9-4n-6w, which flowed 877 barrels of oil in 24 hours from Devonian lime at 1731 feet. The well is the best Devonian producer completed in the area in several weeks.

Kentucky

Sinclair Wyoming Oil Company's Humphrey 2, 6-P-21, wildcat test in Henderson County, filled with 600 feet of oil in 3 hours after operators perforated casing to test McClosky lime at 2555-65 feet. Testing continues.

W. F. Lacey's Williams 1, 4-Q-20, also in Henderson County, pumped 67 barrels in 24 hours from Aux Vases sand at 2595-2605 feet, to open a new pool. Operators were still testing. Depth was 2625 feet.

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Michigan

Essexville Field Receives First Major Extension

Essexville field gets first major extension; Coldwater wells open way for continued expansion.

Bay County: United Drillers & Producers, Inc.'s Walraven 1, NE SW NE 16-14n-6e, Hampton Township, 1½ miles southeast of the Essexville field, pumped an average of 73 barrels daily on a 4-day test in the Dundee. The well will be given a 2-pay acid treatment of 2000 gallons.

The outpost logged Dundee at 2653 feet and showed 46 feet of pay and was bottomed at 2890 feet. It represents the first major extension of the pool since its discovery in January.

Isabella County: Completion by Sohio Petroleum Company of 2 structurally low wells for producers in the Coldwater field has established a minimum productive closure of 34 feet and opened the way for continued expansion.

Sohio discovered the pool this year and has completed 9 of the 10 wells in the field. Latest addition to the field was Sohio's Sisco 1, N½ SE SW 28-16n-6w, northeast offset to the discovery. Dundee was logged at 3713 feet, 24 feet lower than the discovery, with the well showing pay from 3720 to 3724 feet, where it started to flow after standing 12 hours.

Purchasing Agents Elect

Robert V. Stephens, Public Service Company of Oklahoma, was elected president of the Purchasing Agents Association of Tulsa, succeeding R. M. McMahan, who becomes director from Tulsa to the National Association of Purchasing Agents. Other officers include K. C. Manning, Texas Empire Pipe Line Company, first vice president; G. C. Heidinger, Stanolind Oil & Gas Company, second vice president; F. P. Nopper, Gulf Oil Corporation, secretary-treasurer; H. M. Cosgrove, executive secretary; and E. R. Welch, assistant secretary-treasurer.

Oil Holdings Sold

D. J. Marshall of Wichita, Kansas, has sold his interest in the Black-Marshall Oil Company for approximately $500,000. The company was organized in 1939 and its largest holdings are in the Kraft-Prusa pool of Barton County, Kansas, where it owns 61 wells. It also operates in the Trapp, Bernholdt, Big Creek and Ainsworth pools. Marshall plans to continue as an indepedent operator.

☆

WALTER E. TEMPLEMAN, 63, pioneer Oklahoma banker and oil man, died in Tulsa December 10. He was born in Missouri and organized the American National Bank at Holdenville in 1901. He went to Tulsa in 1912 to enter the oil business.

J. E. VILM, formerly with Globe Oil & Refining Company, Wichita, Kansas, has been named general manager for Wood River Oil & Refining Company, Wichita.

California

Gas Field Assures Fuel for San Francisco Industries

New gas field assures fuel for San Francisco area industries; K.C.L. 20-13 drilling below 16,134 feet; Los Angeles test swabbed in.

The Superior Oil Company discovered a gas field with the completion October 21 of Saldubehere 1 in 12-23n-3w, Tehema County, near Corning. The discovery seems to assure the San Francisco Bay area sufficient fuel for its industries.

Total depth is 9225 feet with 8⅝-inch casing cemented at 4071 feet and 818 feet of 5½-inch blank liner cemented at 4796 feet. Plugged back to 4934 feet, it was gun-perforated at 1200-1300 and 1387-1504 feet. Two and a half inch tubing was run, with packer at 1366 feet. On 1-hour flow test through two 1-inch buttons it flowed 17,676,000 cubic feet of gas daily with 380/485 pounds pressure. This was a dual completion through tubing and casing. Shut in pressures are 660/545 pounds. A considerable number of formation tests were made in the lower formations with results unavailable.

Fresno County: British-American Oil Producing Company's Mahoney 58-6, in Section 6-17-17, west of the Helm field, drilled to 8983 feet in shale, and was abandoned December 9. The Eocene sand was pinched out at this location.

Kern County: Standard Oil Company of California's Standard-Fullerton 1, Section 25-27-23 in the Semitropic area, is coring at 14,445 feet. The last 37 feet

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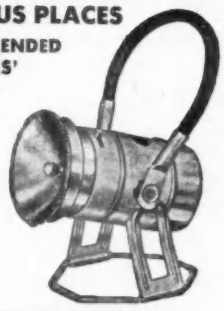

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PAGE 69 OF THIS ISSUE

cored was hard tight sand showing no permeability. A few stringers of soft sand were logged above the present sand. No grit zone has been logged.

Standard's K.C.L.-20-13, Section 5-31-25, world's deepest well, was drilling below 16,134 feet in hard shale on December 14.

Western Gulf Oil Company's Cohn Estate in Section 3-30-28, North of the Mountain View field, was placed on pump December 2, making 180 barrels in the first 15½ hours, 19 percent cut with 440 pounds casing head pressure. Production declined rapidly. On December 5 it pumped 12 barrels daily of 15.5-gravity, 50 percent cut with 100 pounds casing head pressure and on December 6 pumped 4 barrels of 15.5-gravity, 50 percent cut with 30 pounds pressure.

General Petroleum Corporation's Schaller 1, Section 10-28-28, west of the Round Mouuntain field, found the Vedder zone gray. Total depth is 2700 feet with top of Vedder at 2684 feet. The hole was plugged to 1542 feet and is redrilling at 1865 feet in an attempt to cross the fault.

Standard's McPhee 2-1, Section 36-29-21 west of the McKittrick area, attempted a formation test at 7450-7539 feet but drill pipe collapsed, leaving 110 feet of drill pipe, collars and tester in hole. Top of Point of Rocks sand was placed at 7483 feet.

Finding nothing in the lower portion of the hole in drilling to 11,220 feet in the Amalgamated-Happold 2, Section 15-25-24, southeast of the Trico field in Kern County, H. H. Magee, operator, has abandoned this section and is now preparing to test 2 intervals behind pipe set at 10,300 feet by shot perforating.

Los Angeles County: British-American-Texas Company's N. L. & F. 1, 21-4-17, was swabbed in December 10, flowing 91 barrels in 14½ hours, 35.2-gravity, 4.0 cut, from the interval 7475-7699 feet. Barnsdall Oil Company's deep test of the field was drilling at 9280 feet in hard shale with dips of 40 degrees. This well is 3000 feet west and a little north of Barnsdall's nearest producer, R.S.F. 41. It probably is separated by a fault from the main Newhall-Potrero field.

San Joaquin Valley Map Issued by U. S. Survey

Another of the oil maps prepared by the United States Geological Survey has been released, Preliminary Chart 6 of the oil and gas investigations series showing sections of the outcropping rocks of Tertiary and late Upper Cretaceous age along the west border of the north San Joaquin Valley of California.

It was explained that the rocks exposed along the west border of the valley are up-turned edges of formations that dip gently northeastward beneath the valley floor and the widespread concealing cover of sand and gravel deposited by streams. The discovery of the Eocene Gatchell sand in the East Coalinga extension field has encouraged drilling for sands in which oil is trapped by the lensing out of sand up the dip.

Copies of the chart may be obtained from the survey in Washington at 50 cents each.

B. P. SIBOLE, president of Stanolind Pipe Line Company, Tulsa, spoke before the Petroleum Accountants Society of Oklahoma on "Recent Pipe Line Developments."

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Jumping Pound Strike May Fulfill Canada's Long-Time Dream of 'Second Turner Valley'

The long-time dream of Canada's oil industry . . . a second "Turner Valley field" in the Alberta Foothills . . . seemed fairly sure of fulfillment as the result of a big "wet gas" strike at Shell Oil Company of Canada's No. 4-24-J well at Jumping Pound. With the full Madison limestone section not yet penetrated, the new discovery appears capable of an open flow of 20,000,000 cubic feet daily of wet gas, laden with several hundred barrels per day of natural gasoline and light crude oil. The formation pressure is believed to be in excess of 3000 pounds, comparable to the original pressure in the Turner Valley structure.

With the Jumping Pound discovery well sitting on the apparent crest of a long, broad anticline, the indicated Madison lime content opens an excellent prospect of oil being found—as in Turner Valley—on the east and west flanks of the anticline, and on the north and south plunges.

Last week the well was drilling below 9888 feet, 270 feet in the Madison limestone, in dense lime after penetrating and testing 120 feet of porosity in the upper Madison.

A sensationally successful drill-stem test was made December 9 from base of the 7-inch casing at 9636 feet to current bottom at 9860 feet. Tested was a 101-foot porous horizon between 9746 and 9847 feet, and 19 feet of porous streaks above the thick zone. With the tester open 3 hours, the well flowed at an estimated 6,500,000 cubic feet per day rate of "wet gas," running through a ¾-inch choke at the bottom of the drill-pipe, and building up a bottom hole flowing pressure of 1700 pounds. When the pipe was pulled after the test, it was found to contain a column of over 100 feet of distillate, about 60 API gravity. There was no water. A considerable volume of distillate was produced with the gas during the test.

A parallel may be drawn between the Shell Jumping Pound discovery well and the Royalite 4, discovery well of the Madison limestone in the Turner Valley field. The latter well was completed in October, 1924, with an initial "wet gas" flow of 20-22,000,000 cubic feet daily, obtained a natural gasoline yield which ranged for several years between 400 and 600 barrels per day. (The well produced 911,313 barrels before abandonment in 1934 after ten years' operation.)

The Royalite 4 strike led to the development of the big Gas Cap area of Turner Valley, which in turn led to the discovery and development of a major oil field on the West Flank and North and South Plunges of the structure.

Royalite 4 reached the Madison lime at a depth of 3450 feet, 525 feet above sea level. Shell 4-24-J at Jumping Pound reached its Madison objective at 9618 feet, 5598 feet below sea level, more than 6100 feet lower than the Royalite 4, 1500 to 2000 feet lower than the crude oil-water line on the Turner Valley West Flank, and only a few feet higher than the bottom elevation at Turner Valley's deepest oil producer, the Northend Petroleum 1, on the "East Side" lime block. (This well completed drilling at 9612 feet, with base of the lower porous zone 5602 feet below sea level.) The base of the Upper Porous horizon at Shell 4-24-J, at 9847 feet, is 5827 feet below sea level.

Shell 4-24-J, located in lsd 4-24-25-5w5th, is on the indicated crest of a long anticline lying to the east of the Madison lime fault block from which Turner Valley is producing and in which the Shell-Norman 1 test encountered water a year ago (after drilling to a Canadian record depth of 12,056 feet). Unlike the Turner Valley lime block, which has an oil-productive west flank but is cut off to the east by faulting, the Shell Jumping Pound anticline is believed to have both east and west flanks, not severed by major faulting for some distance on either side of the crest discovery well.

At the current stage of the Shell well, the crest of the anticline appears to have been established as a gas cap, as is the case with the Turner Valley crest. What lies in the lower porous zone on the crest, in the lime on the east and west flanks, and in the lime to the north and south along the anticline can only be determined by further drilling. Possibilities for the proving up of a second Turner Valley . . . the long sought objective in the Alberta Foothills . . . are excellent.

Shell Oil of Canada, which has expended around $1,300,000 in the Jumping Pound area, controls 74,166 acres, covering the bulk of rights in a block extending from Township 24 to the lower part of Township 26, from the west half of Range 4w5th to the east side of Range 6w5th.

Under a precedent-making agreement, approved by Order-in-Council, the Alberta government has granted a reservation covering 6000 acres of oil and gas rights in the Calling Valley area, with 20 percent of the cost to be paid in cash, and 80 percent to be paid out of production when and if secured. The deal, with Ace Royalties, Ltd., involves a reservation cost of $25,000, $5000 payable in cash and $20,000 to be paid from 3 percent of gross production, when and if secured. Normally, leases and reservations are sold to the highest cash bidder, with no portion of the price deferred.

Under the Ace deal, the group of independent operators who have subscribed $250,000 for drilling of a deep test—Calling Valley Oils 1—on the structure on which the rights are located, will have $20,000 extra available for development, with the government taking a risk to that extent.

Benefit Banquet

The wildcat committee of the California Oil and Gas Association has announced its annual Christmas benefit banquet which will be held in the Biltmore Bowl on Wednesday evening December 20, Los Angeles. Guest speaker will be Joe E. Brown, internationally known entertainer, who will tell his experiences with the armed forces in the war areas.

The function will again be a benefit for the arts and skills division of the Los Angeles chapter of the American Red Cross.

U. S. Exploratory Completions

CALIFORNIA WILDCATS

Kern County—Failure: Superior Oil Co.'s Moor 2, nw ne 16-29-21, no tests, abnd 4582 ft.

J. J. Tavis and Associate's Tavis 2, se sw 8-27-28, Vedder 2290, abnd 2298 ft.

Los Angeles County—Failure: John Schumacker's Dines 1-31, 31-4-13, terminal zone barren, abnd 3990 ft.

San Luis Obispo County—Failure: Richfield Oil Corp's Temblor Hills Unit 2-2, ne ne 32-12-25, abnd 3050 ft.

Solono County—Failure: Shell Oil Co's Lambie 1, 25-4-1, mechanical trouble, abnd 2617 ft.

COLORADO WILDCATS

Moffat County—Failure: Stanolind O&G Co.'s Hanawalt 1, ne ne se 4-6n-92w, Bell Rock, top Sundance 8848 ft, abdn basal Sundance 9084 ft.

Montezuma County—Failure: Stanolind O&G Co.'s Schmidt 1, c sw nw 25-36n-18w, McElmo structure, abnd 7046 ft.

FLODIDA WILDCATS

Dade County—Failures: Wm. G. Blanchard's Everglades 1, 31-53s-35e, top Norstaff 8367 ft, abnd 10,201 ft.

Wm. G. Blanchard's Grosman 1, 25-55s-37e, abnd 400 ft.

ILLINOIS WILDCATS

Bond County—Failure: Texas Co.'s Miller 1, nw nw nw 22-6n-2w, abnd 2485 ft.

Clay County—Failure: Sinclair Prairie's Haup 1, sw se nw 5-2n-6e, abnd 3210 ft.

Franklin County—Discovery: S. D. Jarvis' Old Ben Coal Co. 1-A, se ne se 29-5s-2e, pump 40 bbls oil, Rosi 2836-66 ft, td 2866 ft.

Franklin County—Failure: E. S. Adkins' Collins, nw sw ne 34-7s-2e, abnd 2201 ft.

Gallatin County—Failure: C. E. Brehm et al's Oldham 1, ne ne nw 24-9s-9e, abnd 2837 ft.

Madison County—Failure: Texas Co.'s Ambuehl 1, ne ne sw 20-4n-5w, abnd 2822 ft.

Montgomery County—Failure: A. J. Hotfelder's Galbreath 1, s½ ne se 14-7n-2w, abnd 1207 ft.

Randolph County—Failure: General O&G Synd's School 4, nw nw se 27-4s-7w, abnd 427 ft.

Wayne County—Failure: Pure's Keith 1-A, nw ne sw 15-2s-7e, abnd 3450 ft.

INDIANA WILDCATS

Gibson County—Failure: Carl Miles' Thompson 1, 11-3s-12w, abnd 1202 ft.

Perry County—Failure: Lora Larkin's Graves 1, ne ne sw 17-5s-2w, abnd 719 ft.

Spencer County—Failure: Texas Co.'s Hanning 1, sw sw ne 2-5s-5w, abnd 1136 ft.

KANSAS WILDCATS

Ellis County—Gas Discovery: J. M. Huber's Mohler 1, cnw ne 22-12s-20e, flow 1,200,000 ft gas Sqr sd 690-718 ft, td 718 ft.

Gove County—Failure: Phillips' Heier 1, ne ne se 34-11s-26w, Lans 3858 ft, Arb 3462 ft, abnd 3463 ft.

Kiowa County—Failure: Tri-State's Jones 1, c sw se 20-27s-16w, Miss 4604 ft, Arb 4954 ft, abnd 4995 ft.

McPherson County — Failure: Amerada's Harmon 1, ne sw 8-18s-1w, Miss 2802 ft, abnd 2818 ft.

Ottawa County—Failure: Emrich's Hopgood 1, sw 23-10s-1w, abnd 65 ft.

Pawnee County—Failure—Ira Keith's Wendell 1, se 24-21s-19w, Cong 4170 ft, Simp 4168 ft, abnd 4204 ft.

Rice County—Failure: Wood River's Gray 1, se ne 11-19s-8w, Simp 3344 ft, abnd 3352 ft.

Rooks County—Failure: Sinclair Prairie's Fry 1, sw nw 25-6s-17w, Lans 3109 ft, Simp 3545 ft, Arb 3575 ft, abnd 3628 ft.

Stafford County—Failure: Maguire Industries' Tretbar 1, se sw sw 12-25s-11w, abnd 4235 ft.

Sumner County—Failure: Darby et al's Freeman 1, ne nw 29-32s, Lans 3235 ft, Simp 4335 ft, abnd 4365 ft.

KENTUCKY WILDCATS

Todd County—Failure: Hobeson & Holeman's Stinson 1, 20-E-28, abnd 1814 ft.

Union County—Discovery: Gulf's Rhea 2, 11-P-19, pumped 47 bbls oil, td 1980 ft.

NORTH LOUISIANA WILDCAT

Union Parish—Failure: J. H. Strieff's Frost Lumber Lands 1, 23-23n-2w, top James 3548 ft, abnd 3595 ft.

MISSISSIPPI WILDCATS

Claiborne County—Failure: Sohio Pettroleum Corp.'s Georgiana Mackey 1, sect 4-10n-3e, abnd 10,127 ft.

Gas Field Discovery: Sun Oil Co.'s W. R. Hammett 1-A, 2-11n-1w, perf csg 935-945 ft, flow 5,000,000 cu ft gas day ⅛-in ch, td 2324 ft salt.

Covington County — Failure: Freeport Sulphur Co.'s M. Beasley 1, sect 17-6n-15w, abnd 1740 ft.

Hinds County—Failure: Premier Oil & Refining Co.'s Landstreet 1, 5-4n-1e, Tuscaloosa 3608 ft, Massive 4224 ft, Lower Cret 4275 ft, abnd 5015 ft.

MONTANA WILDCATS

Pondera County—Failure: Texas' Hovde 1, nw ne sw 8-28n-2w, Sterrenberg Prospect, top Madison 2041 ft, 200 ft sulphur wtr 3 hr, abnd 2044 ft.

Sweetgrass County—Failure: Stanolind O&G Co.'s Rostad 1M, c ne nw ne 16-2s-13e, McLeod, wtr sd 2764-2869 ft, abnd 2992 ft.

Teton County: Texas' Burke 1, sw ne sw 11-25n-4w, Farmington, dry, abnd 1895 ft.

Union Oil of Calif.'s State 1, ne sw sw 27-25n-3w, Farmington, abdn 1600 ft.

NEW MEXICO WILDCATS

Eddy County—Discovery: Martin Yates Jr. et al's A. A. Kaiser 1, ne nw nw 29-18s-27e, elev 3285 ft, pump 8 bbls, shot 194 qts nitro 1350-1400 ft, pay 1395-1483 ft.

Eddy County—Failure: Sanders Bros. et al's Hultman 1, c se ne 32-16s-26e, elev 3381 ft, top lime 824 ft, white lime 6114 ft, abnd in Pennsylvanian 6761 ft.

Lea County—Failure: Texas Co.'s Swearingin 2, c sw ne 9-20s-34e, elev 3634 ft, anhydrite 1520 ft, top salt 1680 ft, Yates 3310 ft, abnd 4769 ft.

Rio Arriba County—Failure: R. S. Rhodes et al's John Sargeant 1, 2225 ft snl and 737 ft wel 23-31n-3e, elev 7707 ft, abnd 880 ft.

OKLAHOMA WILDCATS

Atoka County — Failure: Northern Ord's Ranch 1-S, se sw sw 19-1s-12e, abnd 7022 ft.

Hughes County—Failure: Schermerhorn Oil's Harris 1, ne ne ne 5-7n-9e, Booch 2764 ft, Gil 2985 ft, Crom 2670 ft, abnd 3718 ft.

Love County—Failure: Burk Royalty's Hubbard 1, cne ne 32-9s-2e, Simp 4960 ft, Arb 4996 ft, abnd 5231 ft.

Pawnee County — Oil Discovery: Sunray's Ryan 1, sw se nw 33-21n-6e, pump 26 bbls oil day Wx sd perf 20/2727-45 ft, td 3338 ft.

Seminole County—Failure: Texas Co.'s Case 1, sw ne nw 17-10n-5e, 2nd Wx 4823 ft, abnd 4861 ft.

Stephens County—Failure: A. A. Wisdon's Walters 1, se se sw 3-1s-8w, Arb 4010 ft, abnd 5008 ft.

WEST TEXAS WILDCATS

Cochran County—Failure: Pratt-Hewitt Oil Corp's York 1, 440 ft out SEc labor 13, leag 85, Shackelford CSL sur, elv 3713 ft, abnd 5009 ft.

Garza County—Failure: Honolulu & Devonian Oil Co.'s Storie 1, c nw se E.L.RR.Co. 1303, elev 2951 ft, anhydrite 1320 ft, abnd 3671 ft.

WEST CENTRAL TEXAS WILDCATS

Callahan County — Failure: Trumter Pet. Corp.'s Harp 1, 2050 ft nsl and 1725 ft ewl sec 66, Bayland O. A. Lds, abnd 392 ft.

Eastland County — Failure: Whitaker Oil Co.'s W. L. McDonald 1, 1320 ft nsl and 660 ft wel 622-ac tr, W. T. House subdiv of Harvey Kendrick sur, abnd 3657 ft.

Stephens County—Failure: Maguire Industries, Inc.'s M. Blach 1, 1400 ft out NWc sec 1271, TE&L Co., elev 1143 ft, Palo Pinto 1460 ft, Bend 3215 ft, abnd 3226 ft.

SOUTH CENTRAL TEXAS WILDCATS

Guadalupe County—Failure: Wiegand Brothers' Paul & Emma Baumert 3, Matthew Besore sur 2 mi s Kingsbury, Eagleford 2430-68 ft, Buda 2463-75 ft abnd 2475 ft.

Val Verde County — Failure: Texas Gas Utilities Co.'s Homan Est. 1, GH&SE sur 47, jnk and abnd 450 ft.

LOWER GULF COAST WILDCAT

Bee County—Gas Discovery: W. Earl Rowe's Nona Berry Davis 1, 3½ mi s of Beeville, 6500 ft n of Yougeen field, perf 3773-83 ft, flow 126,000,000 gas open flow, td 4225 ft.

Hidalgo County—Failure: Mamman O & R Co.'s Hamman Fee 1, 1½ mi ne of Monte Christo, San Salvador Del Tule grt, abnd 7210 ft.

Jim Wells County—Failure: Butcher-Arthur Co.'s W. W. West 1, Casa Blanca grt, 2 mi se of Sandia, abnd 5762 ft.

SOUTHWEST TEXAS WILDCAT

Duval County—Failures: R. F. Schoolfield's M. G. Peal 1, J. B. Peal sur 2½ mi w of Kohler fld, abnd 3605 ft.

Texon Royalty Co.'s D. C. Chapa 1, El Mesquite Lge, 8 mi e of Bruni, abnd 3018 ft.

Webb County—Failures: Coastal Refineries, Inc.'s A. M. Bruni 1, 10 mi so of Mirando City, sur 73, dst 1878-92 ft rec sw in 60 min, abnd 2077 ft.

R. F. Schoolfield's A. M. Bruni 1, J. Poitevent sur 471, 1 mi n of Aguilares, abnd 1716 ft.

Zapata County—Failure: Bridwell Oil Co.'s Amanda C. Garcia et al 2, 19 mi e of Zapata in Charco Redondo Grt, abnd 1350 ft.

EAST TEXAS BORDER WILDCAT

San Augustine County: Gandy & Irwin's Annie Anderson 1, 3 mi se Broadus, Crockett 500 ft, top Sparta 830-60 ft, abnd 4745 ft.

EAST TEXAS WILDCAT

Robertson County—Calvert Field Discovery: Hamman Oil & Refining Co.'s P. C. Gibson 1,

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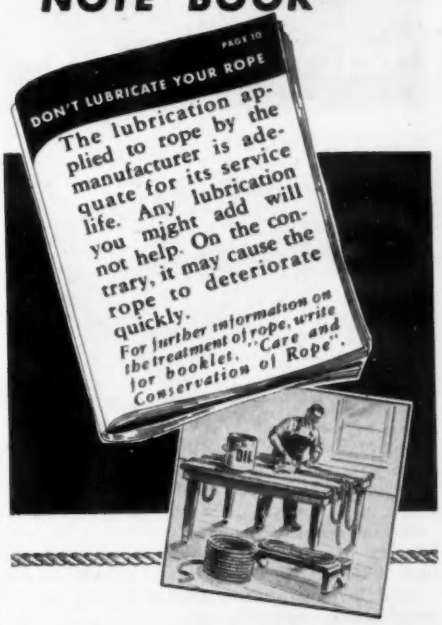
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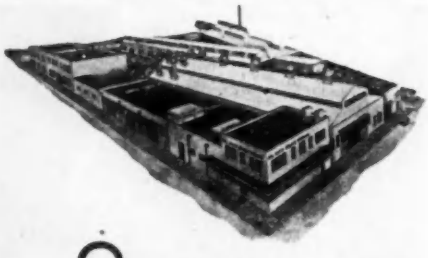

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1000 ft from se and 1700 ft se of nw lines of 1825-ac tr, Jesse Webb sur, 5½ mi w by s of Calvert, originally abandoned June, 1944 at 5022 ft, elev 292 ft, Midway 975 ft, Navarro 1542 ft, Taylor 2198 ft, Pecan 2849 ft, Austin 3935-4123 ft, Woodbine 4380 ft, Del Rio 4526 ft, Georgetown 4577 ft, Edwards 4827 ft, pump 70 bbls 38-grav, Basal Navarro 2181-94, td 4022 ft, pb to 2194 ft.

TEXAS GULF COAST WILDCATS

Brazoria County — Failure: Brewster & Bartle's Marion Mellon et al, Thos. Alsberry sur, 2 mi sw of Lochridge Field, abnd 7760 ft.

Colorado County — Oil Discovery: Sublime Field. Tide Water Associated's D. L. Underwood 1, 3 mi nw of Sheridan, td 9990 ft, perf csg 9500-05 ft in Wilcox sd comp flowing 79.2 bbls 48-grav oil day 10/64-in ch 1,440,000 cu ft gas.

Fayette County—Failure: Continental Oil Co.'s Louise Paulus et al 1, J. S. Menefee sur, 3 mi nw of Flatonia, td 5726 ft, abnd.

Fort Bend County—New Oil Pay: Gulf Oil Corp.'s Invincible 12, Thos. Habermacher sur, sd 3830 ft, perf 3830-45 ft, flow 104 bbls 31.4-gr oil day 5/32-in ch, td 4177.

Jefferson County—Failure: The Texas Co.'s Beaumont Farms Inc. 1, Jas. Garish sur, 2½ mi e of China, abnd 8006 ft.

Wharton County—Oil Discovery: General Crude Oil Co.'s Security Bank & Trust Co. 2, 4 mi sw Lane City S. Castleman sur, sd 5341 ft, perf 5345-50 ft, flow 124 bbls 26-1-grav oil day ⅛-in ch, td 5772 ft.

Wharton County—Failure: J. A. Gray's Mauritz Z-1, M&C sur 11, 7 mi e of Ganado, abnd 6510 ft.

NORTH TEXAS WILDCATS

Archer County—Failure: D. H. Bolin et al's Abercrombie 1-J, 1600 ft ewl and 750 ft snl blk 104, J. Campbell sur A-61, abnd 1326 ft.

Bridwell Oil Co.'s Veitenheimer 2, 808 ft ewl and 1050 ft nsl sec 60, blk 4, Clark-Plumb sur, abnd 1043 ft.

Foard County—Failures: Texas Co.'s Bell 1, 1450 ft snl and 660 ft ewl of 525-ac tr, se part of Abb Luce sur, elev 1397 ft, top conglomerate 5415 ft, Ellenburger between 5800-50 ft, abnd 5900 ft.

Wilbarger County—Failure: J. N. Fidel et al's Shelly 1, 510 ft out swc H&TC Ry, 46, blk 13, elev 1224 ft, top lime 4573 ft, Miss 5410 to 5495 ft, abnd 5618 ft.

NORTH TEXAS NEW PAY TEST

Wichita County—K-M-A New Shallow Pool: Texas Co.'s Fred Thom 15, 330 ft snl and 1015 ft ewl of s 219 acres of W. H. Spillers sur A-257, twin to Strawn and Ellenburger wells, pump 184 bbls, sd 1795-1804 ft, td 1805 ft.

WYOMING WILDCATS

Carbon County—Failure: Cameron & Allen's Dixon 1, nw nw nw 24-21n-88w, West Rawlins, granite 756 ft, abnd 857 ft.

Albany County — Failure: Wasatch Prod. Co.'s Maloquist 1, sw sw sw 33-21n-76w, East Rock River, top Tensleep 3303 ft, abnd 3498 ft.

United States Wildcat Starts

CALIFORNIA

Kern County: Superior Oil Co.'s Midway-Premier 1, nw nw 15-29-21 Cymric Area, mim.

Western Gulf Oil Co.'s Foster 1, ne ne 17-28-28 Kern Front Area, lcn.

Texas Co.'s Round Mountain 1, sw se 13-28-28 Round Mountain Area, lcn.

Drilling and Prod. Co.'s 44-33, se nw 33-11-19 Tejon Ranch Area, lcn.

Drilling and Prod. Co.'s 45-33, nw se 33-11-19 Tejon Ranch Area, lcn.

Los Angeles County: Bishop-Hilo's Pellissier 1, 4-2-11 North Whittier Heights Area, lcn.

ILLINOIS

Greene County: L. J. Loyd's Bays 1, nw nw se 21-11n-12w, lcn.

Hamilton County: Nash Redwine's Bundy Tr 1, sw sw sw 9-7s-5e, lcn.

Madison County: Sohio's Imbs 2, 1-4n-7w, lcn.

Marion County: Howard Johnson et al's Hill 1, se ne se 30-3n-1e, lcn.

Montgomery County: Walter Vette's Hardt 1, sw sw nw 27-9n-5w, lcn.

INDIANA

Daviess County: Crosby & Feltes' Hyatt Est. 1, sw nw 13-4n-7w, lcn.

Gibson County: F. R. Grumme's Louisville Joint Stk Bk 1, ne nw ne 28-1s-10w, lcn.

Joseph County—M. C. Fletcher's Plass 1, sw nw 33-38n-4e, lcn.

Martin County: H. R. Burton's Kidwell 1, sw ne sw 1-3n-5w, lcn.

Montgomery County: Coates & Youngblood's Padgett 1, nw ne 8-19n-5w, lcn.

Posey County: J. T. Peek's Reineke 1, sw ne 12-6s-13w, lcn.

Spencer County: Texas Co.'s Joachim 1, se ne se 3-4s-5w, lcn.

KANSAS

Barton County: R. Gear et al's Carroll 1, sw ne se 21-17s-14w, lcn.

Sunray's Ewing 1, nec 19-19s-14w, lcn.

Vickers Pet.'s Schmidt 1, nw nw ne 35-20s-15w, lcn.

McPherson County: Eldorado Rfg.'s Kingsley 1, swc ne 34-17s-5w, dr 545 ft.

Texas Co.'s Hedlund 1, sw nw nw 26-18s-3w, lcn.

Delk Oil's Voth 1, sec sw 12-19s-1w, dr 150 ft.

W. Eoke's Voth 1, nec nw 1-21s-1w, dr 1158 ft.

Reno County: Plains Exploration's Paine 1, nec sw 26-23s-10w, lcn.

Rice County: Ed Swearer et al's Burns 1, nwc sw 6-21s-10w, dr 825 ft.

Russell County: Kiowa Drlg.'s Washburn 1, nw nw sw 19-14s-11w, dr 265 ft.

Saline County: Anderson-Prichard's Olssen 1, nwc sw 14-15s-1w, lcn.

Stafford County: Sharon Drlg.'s Krey 1, nwc 25-23s-11w, dr 115 ft.

Hinkle Oil's Metz 1, nec se 6-23s-12w, lcn.

Ed Swearer et al's Peats 1, sec se 14-23s-14w, lcn.

KENTUCKY

Caldwell County: Jewell Resnick et al's Woodall 1, 7-K-20, drlg.

NORTH LOUISIANA

Richland Parish: Roy L. Fisher's Graham Unit 1, 1100 ft s & 1774 ft w of nec sect 13-17n-9e, lcn for 3400-ft test.

H. L. Woods' Elett Munholland 1, cent ne/4 of ne/4 sect 20-17n-9e, lcn for 6000-ft test.

MISSISSIPPI

Madison County: Carter Oil Co.'s Alfred Howard 1, sw nw 31-11n-4e, lcn.

Yalobusha County: Sig Onyette's Nettie Austin 1, c se se 1-11s-6w, lcn.

MISSOURI

Platte County: Fox et al's Fee 1, sec sw 12-51n-35w, drlg.

MONTANA

Petroleum County: B. R. Gainer et al, Fradd 1, sw sw sw 4-15n-29e, Cat Creek, lcn.

Pondera County: Texas, Tribal 1, c nw nw 11-30n-7w, Birch Creek Prospect, dr 90 ft.

NEBRASKA

Hitchcock County: Texas Co.'s Redmer 1, swc 35-2n-33w, lcn.

Why THE INDUSTRY'S LEADING CENTRIFUGE?

BECAUSE:

Heavy duty, ruggedly constructed and extremely simple in design . . . Gets quick, accurate results . . . produces required speed with less effort . . . Cranks and heads of 100 CC and 15 CC size machines interchangeable . . . Meets *A.S.T.M. Standard Method D-96 and A.P.I. Code No. 25* requirements.

W·H·CURTIN & CO. Inc.
HOUSTON U·S·A TEXAS

NEW MEXICO

Chaves County: Steinberger & Saunders' G. C. Kimes 1, c ne ne 11-15s-29e, lcn 3500-ft cable test.

Eddy County: Harvey E. Yates & Bay Pet. Corp.'s Miller 1, c nw ne 28-19s-31e, lcn 2500-ft cable test.

Lea County: McElvan Bros. et al's Seale-Texaco 1, 2150 ft snl and 1980 ft ewl 30-18s-34e, lcn 5000-ft San Andres test.

OKLAHOMA

Garfield County: Cities Service's Mariner 1, nw ne nw 6-22n-3w, drk.

Hughes County: Northern Ord's Robertson 1, nw sw sw 32-9n-10e, lcn.

Jefferson County: Bridwell Oil's Haviland 1, nw nw se 33-6s-6w, lcn.

Kay County: Max Cohen's Fassnacht 1, sw ne sw 24-29n-2w, drlg 360 ft.

Marshall County: J. W. Baldwin's Smith et al 1, se se ne 7-5s-5e, lcn.

WEST TEXAS

Cochran County: Honolulu Oil Corp.'s R. M. Hudson 1-B, nw se se PSL sec 5, blk P, 2¼ mi s by W Rhodes pool, lcn 5500-ft San Andres test.

Crane County: Atlantic Ref. Co.'s University 1-A, c nw se sec 33, blk 31, 5¾ mi w McElroy field, lcn 11,000-ft Ellenburger test.

Garza County: Honolulu Oil Corp.-Devonian Oil Co.'s Elmer Hitt 1, sw ne ne HE&WT Ry 1, blk 1, 2½ mi e by n of PHD pool, lcn.

WEST CENTRAL TEXAS

Callahan County: J. W. Huff et al's Huff 1, 660 ft snl and 200 ft wel of 57-ac, or 5200 ft wel 3000 ft nsl of M. Cherry sur, lcn 1700-ft cable test.

Coleman County: Ledge Pet. Co.'s Morris Est. 1, 330 ft out NWc R. Cochran sur No. 269, lcn 2100-ft cable test.

Eastland County—Milo E. Ritchey et al's Carrie Pence 1, 1071 ft snl and 528 ft wel sec 2980, TE&L Co. sur, lcn 2350-ft cable test.

McCulloch County: Mass.-Tex. O&G Co.'s J. S. Hays 1, 1320 ft out NWc S. H. Pool sur No. 14, lcn 2000-ft cable test.

Stephens County: F. Kirk Johnson & Roeser-Pendleton, Inc.'s J. P. Phillips 1, 330 ft nsl and 400 ft wel w½ sec 69, Blind Asylum Lands, lcn 4500-ft Ellenburger cable test.

SOUTH CENTRAL TEXAS

Kimble County: Texas & Pacific Coal & Oil Co.'s Dan Morales 1, Short Heirs sur, in nw part of county, 660 ft fr s and w lines sur 97, lcn.

LOWER GULF COAST

Lavaca County: Kirby Petroleum Co.'s Henry Rochelle 1, Philip Smith sur 2½ mi se of Hope, 330 ft fr ne and 833.33 ft fr nw ls of lse, lcn 9000-ft test.

Live Oak County: Hewitt & Dougherty's R. B. Mahan 1, C. Claunch sur, 5 mi e of Whitsett, 467 fr sl and 1335 fr el 680-ac lse, lcn 6000-ft test.

Nueces County: C. Andrade III's Rand Morgan 1, 8 mi w Corpus Christi, 660 ft fr sl and 330 ft fr el of sect 411, blk 33, lcn for 7500-ft test.

SOUTHWEST TEXAS

Starr County: W. D. Kennard's Anna M. Kelsey 1, 10 mi nw Sullivan City, 330 fr n and 990 fr el of lse, Porcion 87, lcn for 3000-ft test.

TEXAS GULF COAST

Austin County: Dillard & Waltermire's Ed Batla et al 1, 3 mi nw of Cat Springs, Von Roeder sur, lcn for 8,000-ft test.

Chas. Snellstrom's Ed Blazek 1, 600 ft fr nel and 912 ft fr nwl 70.8-ac tr, David Milburn & Thos. Davis sur, lcn for 3000-ft test.

Chambers County: Sun Oil Co.'s Eli H. Moore Est. Double Gum area, 467 ft fr s and e lines of F. W. Plummer sur, lcn for 10,000-ft test.

Fort Bend County: Sugarland Industries' Sugarland & American Canal Co. 1, 4 mi sw of Clodine, 750 ft fr w'ly wl and 125 ft fr sl of I&GN sur 1, lcn for 8000-ft test.

Westland Oil Corp. & Ralph Walton's Julia Tague 1, 1500 ft fr el and 557 ft fr nl of 106.16-ac tr in Manuel Escalera sur in Arcola Area, lcn for 6250-ft test.

Jefferson County: Sun Oil Co.'s American National Bank 1, Taylors Bayou Area, 1000 ft w and 6050 ft s of nec BBB&C sur 396, 17 mi sw of Beaumont, lcn for 10,200-ft test.

Wharton County: John Mayo & Superior Drlg. Co.'s W. C. Hodges 1, 1020 ft fr swl and 2198.2 ft fr sel of 204.75-ac lse, 1 mi e of Wharton, amended lcn for test drilling below 5200 ft.

EAST TEXAS

Bowie County: A. M. Sutton et al's J. G. Newkirk 1, 1980 ft wel and 500 ft nw of se lines of Jesse Dean sur, sd repairs 2080 ft.

Cherokee County: Kennecott Copper Co.-Jack W. Frazier's W. Hale 1, 330 ft wel and 330 ft nw of se lines of 44.64-ac unit, or 1650 ft ewl and 3450 ft fr m/n/n of E. C. Allison sur, 1½ mi ne Mixon, rur 5000-ft Woodbine test.

EAST TEXAS BORDER COUNTIES

Panola County: Skelly Oil Co.'s W. F. Beall Unit 1, 1320 ft fr nl and 750 ft fr el David Blankenship sur, bldg roads.

NORTH TEXAS

Archer County: D. H. Bolin's C. L. Abercrombie 1-J, 150 ft ewl and 750 ft snl of S. Abercrombie sur A-752, lcn 1350-ft rotary test.

Clay County: Bradley & Suddath's Moser 2, 150 ft snl and 750 ft wel of w-70 ac of s½ blk 74, Parker CSL sur, lcn 350-ft cable test.

A. R. Dillard et al's A. L. Herndon 2, 2386 ft ewl and 1773 ft nsl S.P. Ry. sec 1, A-434, lcn 1800-ft rotary test.

L. V. Hull et al's R. L. Kempner 2, 660 ft out SEc S.P.Ry. sec 1, A-429, lcn 800-ft rotary test.

Cooke County: Benson Bros. et al's H. Fleitman-Danglemeyer 1, 705 ft nsl and 232 ft ewl lot 6, Thos. Scott sur A-900, lcn 2000-ft Ellenburger test.

G. E. Kadane & Sons' F. X. Hacher 1, 330 ft out NEc of D. W. Donnell sur A-1477, lcn 3500-ft Ellenburger rotary test.

Wichita County: Akin-Dimock et al's W. B. Honaker 1, 600 ft ewl and 850 ft nsl of s 160-ac in se part Jas. Cole sur A-37, lcn 2000-ft test.

R. J. Rodocker et al's A. V. Dittoe 1, 575 ft nsl and 150 ft wel of lot 10, J. A. Scott sur A-302, lcn 700-ft cable test.

NORTH TEXAS NEW PAY TEST

Archer County: W. C. Young et al's C. Albers-Magnolia 2, 330 ft out SEc nw 40-ac of blk 117, J. W. Harris sur, top Canyon 2243 ft, dr 2530 ft.

WYOMING WILDCATS

Carbon County: British-American's Gov't. 1, "C," nw nw ne 26-21n-78w, Little Medicine Bow, lcn.

Fremont County: Ohio Oil Co.'s State 1, ne nw nw 16-39n-91w, Lysite, 4500-ft Tensleep test, lcn.

Hot Springs County: Pacific Western et al, Weadick 1, ne sw ne 22-43n-92w, Lucerne, lcn.

Pacific Western et al, Unit 1, nw sw sw 36-44n-93w, Zimmerman Buttes, lcn.

Natrona County: Kerlyn's Gov't. 1, ne se ne 23-35n-79w, Midway, 8200-ft test, lcn.

WESTERN CANADA

Southern Saskatchewan — Elbow: Imperial-Elbow 1, lsd 12 25-[illegible]3-6w3rd, co-ordinates not reported, rigging up.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ FOR SALE: One light second-hand drilling rig, 4500 ft. 4 in. pipe with tool joints; two 125 HP boilers; located in North Central Texas. Address: Box 34, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: Oil Well 320 Triplex Steam Slush Pump with 12" suction hose and strainer. Good as new. Also unitized coring unit complete with 11,000' of ⅝" line. First class condition. Equipment located at Donaldsonville, La. For particulars call or write McDaniel & Beecherl Drilling Co., 210 Constr. Bldg., Dallas, Texas.

PIPE AND PRODUCTION EQUIPMENT FOR SALE

Production Equipment

1—American Mfg. Co. 35 H.P. Twin Crank Herringbone Gear Pumping Unit, 25,000 lb. capacity. This is a 2-well Hookup with 25,000 lb. Underpull American Back Jack. Powered with V-Belt Drive to a Vertical Superior 2-cylinder 2-cycle Gas Engine of latest type. Serial No. GB-1239 w/ Model HC-30 Novo Air Starting Engine and Compressor and No. 4000 Sturtevant Cooler. This is a Major Company installation used 2 years.
1—94' x 24' x 5' 6" Werme Steel Derrick.
8000' of Axelson ¾" x 25' Pin and Pin API Sucker Rods like new.
3—Hughes 4000 lb. Test Xmas Trees with Hughes Wing Valves.
2—O.C.T. 6000 lb. Test Xmas Trees large type down to 10" surface with 6000 lb. Test W.K.M. Valves.

Tanks

2—1250 bbl. Riveted Plate Tanks with 15' x 5' Plates.
4—Hi 500 bbl. National Bolted A.P.I. 12-Gauge Tanks with all walkways and stairways.
1—750 National Gunbarrel. A.P.I.

Used Pipe

10,000 feet of 5½" O.D. 17 lb. J-55 8 Rd Thread casing and Grade D. 10 Thd. Seamless Casing pulled from 7000' Aransas Pass, Texas, wells.
5000 feet of 7" O.D. 24 and 26 lb. Grade C. Seamless Casing.

SEMINOLE PIPE & SUPPLY COMPANY
Corpus Christi, Texas

■ FOR SALE: The following used equipment, located at Mt. Carmel, Ill.
1—A-80 T C A Alten Continental Pumping Unit.
5—D T 109 Ideco Pumping Units.
2—10 D Jensen Pumping Units.
1—No. 10 National Pumping Unit.
7—U-2 International Motors.
6—F C U Waukesha Motors.
1—Complete Drilling Rig, including:
1—60 ft. "A" Mast 10-inch pole with drawworks built in powered with Mercury motor.
1—Kohler light plant.
1—Novo water pump.
1—Caterpillar Diesel, 13,000 engine.
1—6 x 12 oilwell pump.
1—17" oil bath rotary table.
525 ft. ⅞" drilling pipe.
2,700 ft. 4½" drill pipe.
1—1,800 gal. fuel tank on skids.
1—550 gal. fuel tank on skids.
Drilling tools, hand tools, 7' x 9' steel dog house.

Available for inspection on O'Meara Bros. lease 1 mile north of Mt. Carmel, Illinois, on Highway No. 1. For further information, contact M. L. Londot, 601 City Bank Building, Shreveport, Louisiana.

FOR SALE

FOR SALE
New and Reconditioned Iron & Steel
VALVES
Tested and Guaranteed
LARGE STOCK OF FITTINGS
APEX IRON & METAL CO.
2204 S. Laflin St. Chicago 8, Ill.

WANTED TO BUY

■ **WANTED: One Rotary Power Driven Drawworks. Prefer Wilson Mogul with gear box and friction clutch or R. Cardwell. Address Box 302, Fairfield, Illinois.**

HELP WANTED

■ Chemical Engineer to engage in research and development work with major oil company along crude oil producing lines. Would include some field work. Recent graduates of interest. Position offers good future. Give full personal data, experience, and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 30, c/o The Oil Weekly, Houston, Texas.

■ Research Geophysicist with several years experience preferably including field work and laboratory work, to engage in research geophysics with major oil company. In charge of work including evaluation of new ideas and experimental development of same. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 28, c/o The Oil Weekly, Houston, Texas.

■ Engineer or Physicist to engage in study of reservoir performance as related to physical properties with major oil company. Individual should have aptitude and background to enable the mastering of mathemathical analysis of problems in flow of fluids. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 29, c/o The Oil Weekly, Houston, Texas.

■ Wanted by a consulting geophysical organization, Petroleum Engineers with Hayward Mudlogging experience or its equivalent. Immediate openings in Venezuela. Excellent opportunity for advancement to managerial positions throughout the world. Address: Box 36, c/o The Oil Weekly, Houston, Texas.

■ Experienced Party Chiefs, Computers, Observers, Engineers for seismograph and gravity meter work. Expanding company offering best of salaries, working conditions, prospects for advancement. Give full personal data, experience, references. Answers held strictly confidential. Address: Box 41, c/o The Oil Weekly, Houston, Texas.

SERVICES

■ Gravity Meter Survey Service, with or without Seismographic Shooting. Make contracts now for early 1945 season. Address: Box 32, c/o The Oil Weekly, Houston, Texas.

NOTICES

■ CAPITAL SEEKERS—Interested in raising $25,000 or more for a postwar project should write to AMSTER LEONARD, Fox Bldg. Detroit 1, Mich.

LET JOHN FIELD-MAN HELP YOU SOLVE YOUR NEXT WATER CONDITIONING PROBLEM!

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JOHN FIELD-MAN
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2211 PRESTON AVE. HOUSTON, TEXAS

PAGES 3079 THRU 3098
IN THE 1943-44
COMPOSITE CATALOG

UNIBOLT
THE ONE BOLT COUPLING

QUICK CHANGE ARTISTS

When rigging up or tearing down, it's a simple, easy job to make or break UNIBOLT connections with an end wrench. Use more UNIBOLTS to increase rig efficiency.

★

THORNHILL-CRAVER COMPANY
HOUSTON

Squeaks from the Bull Wheel

Ceiling Zero

The husband answering the phone said, "I don't know. Call the weather bureau," and hung up.

"Who was that?" asked his wife.

"Some fellow wanting to know if the coast is clear."

Why, Certainly

Sign in a Scotch church: "Those in the congregation who habitually drop buttons in the collection plate are asked to drop their own buttons and not those from the cushions on the pews."

Poet's Nook

How fat she is
She used to wasn't—
The reason is
She daily doesn't.

Missing Heirloom

Classified ad: "If the person who stole the jar of alcohol from the cellar will return grandma's appendix, no questions will be asked."

Definitions

Virtues are what you learn at mother's knee. Vices are learned at some other joint.

A strip tease dancer is a girl who makes a bare living.

An old maid is a girl who peeps under the bed twice when the circus is in town. She doesn't want to overlook a midget.

Home Furnishings

"Where can I find some silk coverings for my settee?"

"First aisle to the left for the lingerie department."

Graveyard Giggle

Beneath this stone lies Murphy
They buried him today;
He lived the life of Riley—
When Riley was away.

In A Lather

"How come you-all sharpenin' dat razor, Rastus?"

"Honey chile, dey's a pair of gemmun's shoes under yo' bed. If dey ain't no nigger in dem shoes, I'se gonna shave."

Minor Error

"Home, James."

"You can stop that, wise guy. This is a public taxi."

"Oh, very well. Home, Jesse James."

Strictly Typical

"Don't you think my new hat is a perfect fit, dear?"

"Fit? It's a convulsion!"

The Gentlemen Agree

"I'm forgetting women."

"So am I. I'm for getting a couple right now."

Must Be Tiresome

"You've been watching me fish for three hours. Why don't you try it yourself?"

"Ain't got the patience."

—Core Driller

"And here's one I bagged at the last AAPG."

It's a Date

"Are you free tonight, you pretty thing?"

"Not free, handsome, but certainly inexpensive."

Standco
NO-SMOKE

STANDCO BRAKE LINING
for the easiest brake known. It "feeds off" evenly. Standco never scores brake rims. See page 2808 Composite Catalog.

Standco Brake Lining Co.
HOUSTON

William M. Barret, Inc.
Consulting Geophysicists

Specializing In Magnetic Surveys

Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique

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HOUSTON LABORATORIES
Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Tex.

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138 823½ Monroe Street, Fort Worth, Texas

Notes for the Equipment Buyer and User

Electronic Thermometer

BAILEY METER COMPANY

Bailey Meter Company, 1050 Ivanhoe Road, Cleveland, Ohio, has perfected an electronic type resistance thermometer suitable for indicating, recording and controlling temperatures between 100 and 1000° F.

The recorder operates on the null balance principle and is said to provide instantaneous balancing action by electronic detection and control. Unbalance of the measuring bridge is detected by electron tubes.

A 29-inch indicating scale which circles the chart may be read easily at 50 feet. The pointer reading coincides with that of the recording pen. Indicating, recording and controlling mechanisms are driven by the same reversible electric motor which adjusts the slidewire resistance to balance the measuring bridge. This motor is continuously connected to the electronic control unit, which in turn is continuously connected to the measuring bridge. As many as four recording pens may be used with the thermometer, each provided with its own continuously connected electronic control unit and measuring bridge.

Bailey Electronic Recorder

The temperature sensitive element is a platinum resistance wire wound on a mica form and held between two mica sheets which are clamped by a metal frame. The element is further protected by a well which is permanently installed in the pipe line, furnace wall, duct, or other point of temperature measurement.

Service Pins Awarded At Baker Oil Tools Banquet

The California Division of Baker Oil Tools, Incorporated, Huntington Park, California, awarded service pins at its Third Annual Service Pin Banquet. Twenty-nine pins were awarded for periods of employment of five, ten or fifteen years, including the following men in the armed forces: R. G. Brandt, F. S. Fobes, G. H. Frahm, S. W. Martin, A. E. Pruett, Jr., C. B. Walker, R. N. Waters, and E. W. Wilkins.

In the top photo, front row, left to right, are (figures after each name denote years of service): K. F. Polzin 5, C. T. Warren 15, H. C. O'Neil 5, H. E. Willey 10, G. L. Edler 5, F. C. Markley 10, F. W. Kletka 5; second row, C. M. Byron 10, W. A. Spence 10, Margaret M. Martin 5, C. M. King 10, R. S. Kail, central division 15-year man, R. W. Henderson 10, K. J. Leeg 5; top row, R. B. McCannon 15, C. A. Jensen 10, L. J. Maguin 15 and H. W. Bradshaw 10. Not in picture, C. A. McDonald 15, A. W. Hess 5, R. E. Mittnacht 5.

At the speaker's table, lower photo, left to right, are: C. A. McDonald, Seaman First Class Harry Fields, Lieut. Harry Graham, Commander Jonah Jones, Lieut. Walter Kane, T. Sutter, R. C. Baker, R. S. Kail, Lieut. Paul A. Sailer, C. T. Warren, K. F. Polzin, W. A. Lorenson and L. J. Maguin

National Supply Company Selects Vice President

The National Supply Company, Pittsburgh, Pennsylvania, announced election of E. H. Thorsteinson as vice president and controller. Associated with the firm since March, 1942, Thorsteinson was formerly assistant general controller for Montgomery, Ward & Company at Chicago.

E. H. Thorsteinson

Brown Instrument Company Names Industrial Manager

Brown Instrument Company Division of Minneapolis-Honeywell Regulator Company, Philadelphia, announced that O. B. Wilson has been named New York industrial manager, effective January 1. Connected with the company 21 years, he is now industrial manager of the Chicago branch.

J. A. Robinson, who will succeed Wilson, has been with the company 15 years.

Dia-Loy Company Appoints Western Sales Manager

Dia-Loy Tubing Survey Company, Whittier, California, has appointed C. M. Rader general sales manager in charge of the western territory.

He has been identified with the oil production and supply industries for 24 years, having served in various capacities in the Rocky Mountain, Mid-Continent and California fields. Formerly he was associated with Kobe, Incorporated.

C. M. Rader

Rader will supervise promotion and development of oil field service.

R. E. Friend Again Heads Diesel Engine Association

Diesel Engine Manufacturers association, 1 North La Salle Street, Chicago, has re-elected Robert E. Friend as president. He is president of Nordberg Manufacturing Company.

Two vice presidents elected are F. H. Kilberry, who heads Atlas Imperial Diesel Engine Company, and E. J. Schwanhausser, vice president of Worthington Pump & Machinery Corporation.

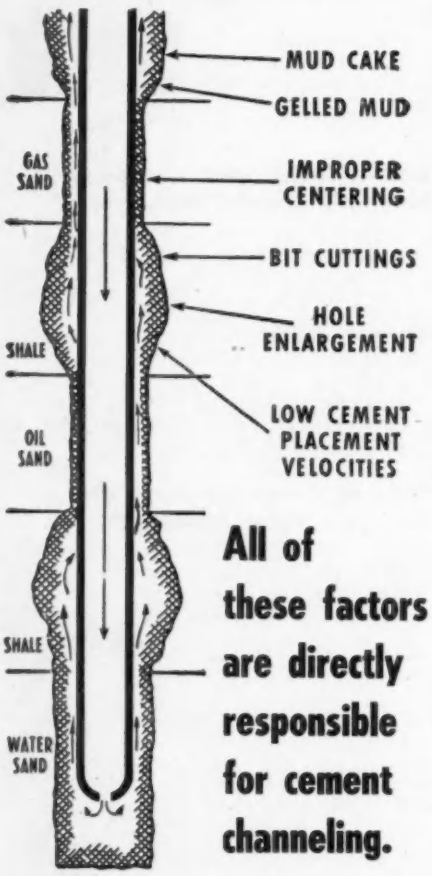
Robert H. Morse, Jr., general sales manager of Fairbanks, Morse & Company, was re-elected treasurer, and Harvey T. Hill continues as executive director.

Four directors were named as follows:

PREVENT
Channeling
WITH

B and W, Inc.

Wall Cleaning Guides



All of these factors are directly responsible for cement channeling.

Placement of B & W Wall Cleaning Guides at 5-foot centers on your casing throughout the productive sand sections, coupled with movement of the casing during the cementing operation, provides good cement CONTACT and a good completion.

BRUCE BARKIS — B and W, Inc. — KENNETH WRIGHT

Well Completion Specialists

WEST COAST: 3545 Cedar Avenue
Long Beach, Calif. • Phone: L. B. 4-8366
GULF COAST: 305 M & M Building
Houston, Texas • Phone: Preston 9783

Norris H. Schwenk, president of Busch-Sulzer Brothers Diesel Engine Company; Charles E. Brinley, chairman of the board, Baldwin Locomotive Works; Charles G. Cox, vice president of Enterprise Engine & Foundry Company, and F. H. Kilberry.

Fisher Governor Appoints New York Representative

Fisher Governor Company, Marshalltown, Iowa, has appointed Malcolm W. Black & Company its representative in metropolitan New York and surrounding territory, including Connecticut and Northern New Jersey, with offices at 41 East 42nd Street, Room 520, New York City.

Black, a graduate electrical engineer from the University of Oklahoma, has been associated for ten years with Manning, Maxwell and Moore in the Tulsa area, first as sales engineer and later as district manager. Prior to that time he was a primary meterman of the Northern Division of Oklahoma Gas & Electric Company and from 1930 to 1935 was chief instrument engineer for Continental Oil Company at Ponca City, Oklahoma.

Fluorescent Data Available

A bulletin entitled "Fluorochemistry in Petroleum Science," by Jack De Ment, fluorescent research chemist, has been published by Ultra-Violet Products, Inc., Los Angeles, manufacturers of fluorescent ultra violet lamps.

This bulletin, known as No. 2, is one of a series printed in form for convenient filing. The service is available without cost upon request to Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles 27.

Third Star Awarded

Kewanee Boiler Corporation, Kewanee, Illinois, has been awarded the third white star to be added to the Army-Navy E pennant maintaining outstanding achievement in producing materials essential to the war effort.

Thomas J. Flanagan, Head Of Gaso Pump Firm, Dies

Thomas J. Flanagan, 65, president of Gaso Pump & Burner Manufacturing Company and of the Tulsa Iron Works, died December 7, following a stroke suffered at his Tulsa office.

He founded the Gaso company in 1916 and the Tulsa Iron Works with Michael J. Flanagan, who is co-owner of both businesses. A native of Pennsylvania, he entered the oil industry in 1904 with the Prairie Oil and Gas Company and went to Tulsa in 1911.

Tire Handbook Published

The B. F. Goodrich Company, Akron, Ohio, has published a booklet called B. F. Goodrich Operators Handbook. In pocket-size format, the 96 pages contain data on tires the company makes for commercial service.

Eight listed factors which affect truck tire life are loads carried, air pressure, speed, matching of duals, load distribution, rims, size and condition, wheels, brakes and springs, and how the vehicle is driven.

Duronze Booklet Revised

Bridgeport Brass Company, Bridgeport, Connecticut, has published a revised edition of its 80-page Duronze manual. The booklet contains specifications and technical data on five copper base engineering alloys. Discussed and illustrated are many examples of product improvement through high-strength corrosion resistant Duronze for modern requirements involving higher engineering standards.

Valve Booklet Issued

Durabla Manufacturing Company, 114 Liberty Street, New York, has published two bulletins on Durabla valves, one for diesel engines, pumps and compressors, and one for pumps. Special features of these valves are notes and the various applications discussed.

Advertisers' Index

* Indicates detailed information on products and services included in 1943-44 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

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